IN THE UNITED STATES DISTRICT COURT FOR THE
WESTERN DISTRICT OF OKLAHOMA

BETTY ANN MARSEE,
Administratrix of the Estate
of MARVIN SEAN MARSEE,
Deceased,

Plaintiff,

vs.

UNITED STATES TOBACCO CO.,
a New Jersey corporation,

Defendant.

No. Civ-84-2777R

TRANSCRIPT OF JURY TRIAL PROCEEDINGS
Friday June 13, 1986

Appearances:

HON. DAVID L. RUSSELL,
U.S. District Judge, Presiding

GEORGE W. BRALY, Esquire
DANIA DESCHAMPS-BRALY, Esquire
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Maynard E. Peterson, CSR
Acting Official Reporter

BE IT REMEMBERED, that on the 13th day of June, 1986, the above matter coming on for jury trial before the Honorable David L. Russell, United States District Judge for the Western District of Oklahoma, and the parties appearing in person and or by counsel as hereinabove set forth, the following proceedings were had:

MORNING SESSION

Friday, June 13, 1986

THE COURT: Good morning. Be seated. Defendant, you may call the your next witness.

MR. JENNINGS: We call Doctor Helfrick.

JOHN F. HELFRICK, D.D.S.,

called as a witness on behalf of the defendant, being first duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. JENNINGS:

MR. BRALY: Your Honor, could we have a word at the bench before we begin?

(The following proceedings were had AT THE SIDE

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BAR.)

MS. DESCHAMPS-BRALY: We did not want to have to interrupt in the middle of the proceedings, and from what I can gather from the pretrial order, they intend to present some testimony from some of these witnesses as to Carl Hook's treatment of Sean Marsee. Is that correct?

MR. JENNINGS: Not by any of these witnesses today.

MS. DESCHAMPS-BRALY: But not any of the ones today, so we can handle this later on this afternoon.

MR. JENNINGS: There will being no testimony from these witness today about the treatment.

MR. FINNEGAN: Not from these witnesses about the treatment.

MS. DESCHAMPS-BRALY: Okay.

(The following proceedings were had IN OPEN COURT.)

DIRECT EXAMINATION

BY MR. JENNINGS:

Q. Doctor, if you will just adjust that microphone so that you are speaking into the black microphone, it many pick you up.

Will you state your name, please.

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A. John F. Helfrick.

Q. Where do you live?

A. [DELETED]

Q. What is your business or profession?

A. I am an oral and maxillofacial surgeon.

Q. And by whom are you employed or where do you practice?

A. I am employed by the University of Texas at the Health Science Center in Houston.

Q. And how is that generally known, that center? Is that the M. D. Anderson Hospital?

A. Well, it's Texas Medical Center of which M. D. Anderson Hospital and several others are part of.

Q. And do you do your surgery at M. D. Anderson?

A. I do some of my surgery at M. D. Anderson, yes, sir.

Q. How long have you been at the University of Texas at Houston?

A. Approximately two years.

Q. And, Doctor, if we may, start with your educational background. Tell us about your education.

A. I am a Hoosier. I went to Indiana

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University, undergraduate school, and to dental school at Indiana. I then had my oral surgery training at Sinai Hospital in Detroit. I also have a master's degree in physiology from Wayne State School of Medicine.

Q. And when did you finish your training at Detroit?

A. In 1971.

Q. When you were at Indiana, were you acquainted with Doctor Shafer, Bill Shafer?

A. He was one of my mentors, yes, sir.

Q. After you finished at Detroit, then where did you go?

A. I had two years in the Army in Fort Hood, Texas, and then I returned to Sinai in 1973 as chairman of the department there.

Q. All right, sir. And how long did you remain there?

A. Approximately 11-and-a-half years.

Q. You stayed there until you went to Houston; is that right?

A. That's correct.

Q. Doctor, what medical associations or dental associations are you a member of?

A. Oh, Michigan Dental Association, Texas

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Dental Association, the American Association of Oral-Maxillofacial Surgeons, diplomate of the American Board of Oral-Maxillofacial Surgery and many others, American Cleft Palate Association.

Q. Tell me what the American board is. What does that mean?

A. Board certification in a specialty is the ultimate, if you will, academic qualification for an individual following completion of training. An individual has a period in the practice of the specialty and is then examined, both oral exam and written examination, for certification.

Q. And that is what is generally referred to as being board-certified; is that correct?

A. That's correct, yes.

Q. Doctor, have you published any papers or any works?

A. Yes, sir, I have published numerous articles in the scientific journals, and I have four or five chapters of books.

Q. All right, sir. Doctor Helfrick, have you been furnished with copies or a copy of medical records of Sean Marsee?

A. Yes, I have been.

Q. And have you examined those records?

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A. Yes.

Q. And from those records have you learned that on January 11, 1983, Sean Marsee was seen by a Doctor Balz and there was a diagnosis of leukoplakia of the right lateral border of the tongue?

A. Yes, sir.

Q. And that on the 4th of April, 1983, Sean Marsee was seen by a family physician, a Doctor Goodrich, and referred by her on the next day, April the 5th, 1983, to a Doctor Hook? Are you familiar with that background?

A. Yes, sir, uh-huh.

Q. And are you familiar with the fact that Sean Marsee gave history of having used Copenhagen Snuff for approximately six years --

A. (Nodding yes).

Q. -- and he gave a history of placing the snuff -- or the testimony is here, and I would ask you to assume that he placed the snuff either in the right side of the lip or in the right side of the cheek between the cheek and the gum.

Now, going back to his medical history, there has been testimony here by Doctor Hook that he was reasonably certain the minute he saw the lesion that it was malignant on the 5th of April, 1983. He

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saw Sean Marsee again on April 20th, which was 15 days later, at which time he scheduled surgery for May 16th. Do you remember that from the records?

A. Yes, sir.

Q. On May 16 Doctor Hook performed a partial glossectomy. Would you tell the jury what that is once more.

A. A partial glossectomy is a removal of a portion of the tongue. We generally describe glossectomies as either partial, which is less than half, a hemiglossectomy which is half, or a total glossectomy.

Q. After that surgery on the 16th of May, it was anticipated that Sean would receive radiation therapy, but because of the suspicion that there might be nodes in the neck, the radiation therapy was not given at that time; and on June 20th, I believe it was, he had a neck dissection. You are familiar with that?

A. Yes, sir, uh-huh.

Q. Thereafter he did receive radiation therapy, and then again because of metastasis or an additional problem with his neck, he had a radical neck dissection on December 1st, 1983.

A. Yes, sir.

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Q. Are you familiar with that?

A. Uh-huh.

Q. And he subsequently died from cancer on February 25th, 1984.

A. Yes, sir.

Q. Are there any other factors that I have omitted that you would need to know in order to give an opinion about this case?

A. I do not believe so.

Q. Based upon those factors that are known both from assuming them, if I ask you to, and from what's in the medical records, do you have an opinion as to whether or not Sean Marsee's cancer of the tongue, and I should have included, which you know from the records, that the cancer was on the right lateral margin of the tongue, that his cancer of the tongue was caused by the use of snuff?

A. I could not say with certainty that it was, no, sir. I do not believe it was.

Q. You do not believe that it was?

A. No, sir.

Q. Why do you express that opinion?

A. My personal experience in managing five patients under age 25 with oral malignancies, one of which was a sarcoma, which is a different lesion,

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four of them were squamous cells carcinomas, all of the tongue. In those four cases none of the patients had any history of smoking or alcohol abuse. They had no history of habits.

And my review of the literature over the past 15 years leads me to believe that this is the most common scenario, that young patients rarely, if ever, have any history of habits that could have been attributed to the cancer.

Q. When you say "no history of habits," does that include smokeless tobacco habit, as well as smoking, no history of tobacco use of any kind?

A. They had no -- no habits, either smokeless tobacco or smoking.

Q. Is there anything other than the youth of the patient that is important in your opinion, Doctor?

A. I have not seen, again, in my practice, nor am I aware of well-documented scientific information that shows that squamous cell carcinoma of the tongue is related to the use of smokeless tobacco.

Q. Is there anything about the duration of the use of the smokeless tobacco that would be of any importance to your opinion?

A. In those cases that I am familiar with in

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the literature and in my private practice, the patients that I have seen who have developed a type of tumor as a result of the smokeless tobacco, the duration was a longer duration, and the literature speaks from 40 to sometimes 50 years prior to the onset of a tumor.

Q. Doctor, what about the nature of the tumor in this case? Have you seen the slides?

A. I have not. I have not. I have merely had the pathology report.

Q. Is there anything about the subsequent course of the disease that is of any importance in your opinion?

A. The course, the patient's course, unfortunately, was very much analogous to my personal experience, in that the tumors in the younger patient like this on the tongue behave very aggressively and they metastasize early and do not seem to respond as other tumors do to the usual methods of surgery, radiation therapy and chemotherapy.

Q. Have you had experience with other cancer, oral cancer, in other areas and in older people?

A. Yes, sir, I have.

Q. What has been the experience with regard to the course of those cancers?

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A. We see various types, depending upon the cancer's location. The older patient seems to have a better prognosis, particularly the longer the -- the older the patient is, but I will also say that I have had -- had some patients who have developed squamous cell carcinoma also in other areas of the mouth at an older age who do not have any of the alcohol or tobacco history that we sometimes see and usually see. The patients in the older group who have used smokeless tobacco in my experience have had very slow-growing tumors. I don't recall ever treating one that had metastasized, had spread.

Q. Is the name of Lauren Ackerman a name that is familiar to you?

A. Yes, sir.

Q. Who is Lauren Ackerman?

A. He is a pathologist.

Q. What is his standing in the profession?

A. Very well-respected oncologic pathologist.

Q. He has testified with regard to a verrucous carcinoma. Is that term familiar to you?

A. Yes, sir.

Q. And what has been your experience, if any, with verrucous carcinoma?

A. We generally describe verrucous, which means

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wart-like, it looks like a wart, grows out, rather than going down into the tissues. It is a fairly superficial lesion. It is a type of squamous cell carcinoma. That is, it is in the classification of squamous cell carcinoma. And if you were to grade the tumors, squamous cell carcinoma, from one to ten, ten being the very virulent, aggressive, endophytic type of tumor that grows into the tissues, verrucous carcinoma would be around a two or three where they are slow-growing. These exophytic, they are usually quite easily treatable with surgical removal.

Q. Is verrucous carcinoma also a squamous cell carcinoma?

A. Yes, it is. It is a type of squamous cell carcinoma, a variant thereof.

Q. Okay. Doctor, with regard to the location of the tumor in the case of Sean Marsee, where, according to the medical information you had, was that tumor located?

A. The right lateral border of the tongue.

Q. What part of it, do you recall?

A. Mid-third.

MR. JENNINGS: If I may approach the witness, Your Honor.

Q. (BY MR. JENNINGS) Doctor, we have a plaster

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model of the lower part of the mouth and tongue.

A. Uh-huh.

Q. Could you demonstrate on that where that lesion would occur?

A. Well, I will try. The portion that I visualize and where they most commonly are is around the side which is blocked here by the teeth, but it is generally in this area here (indicating).

Q. I see. And would that be described as the middle third of the tongue?

A. That's correct.

Q. All we show here is the anterior two-thirds?

A. The anterior two-thirds.

Q. That is generally referred to as the mobile or oral tongue?

A. That's correct.

Q. And the posterior third is the fixed portion of the tongue?

A. Yes, base of tongue.

Q. Base of the tongue.

Q. Assuming that the lesion was as the medical records indicate in the middle third of the tongue, how would that relate to the point where the tobacco was held if it was held either in the right side of the lip and gum or in the right cheek and the gum?

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A. It would be lateral to the teeth and to the gum tissue in that area.

Q. Would it be --

A. The area that the tobacco is held.

Q. Would it be in direct contact with the tongue?

A. No, sir. No, sir.

MR. JENNINGS: You may cross-examine.

CROSS-EXAMINATION

BY MR. BRALY:

Q. Doctor Helfrick, good morning.

A. Good morning.

Q. Welcome to Oklahoma. My name is George Braly. My law partner and I represent Mrs. Betty Marsee who is here at this table.

Are you a dentist, sir?

A. Yes, sir. A DDS by training and oral surgeon by practice.

Q. What is encompassed in the practice of oral surgery?

A. Oral-maxillofacial surgery is the specialty which involves management of oral diseases, tumors and tumors of the jaw structures, injuries to the maxillofacial region, jaw, jaw --

Q. You don't do radical neck sections?

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A. No, I don't do radical necks, no.

Q. Do you extract wisdom teeth?

A. Yes, I do. That is one portion that an oral surgeon does.

Q. Do you do glossectomies?

A. Yes, sir.

Q. Okay. Now, is the tongue bathed in saliva?

A. Yes, sir, it is.

Q. If you stick your tongue out and put a napkin on it, the napkin is going to come out wet?

A. That's correct.

Q. How much do you know about the chemicals that are in smokeless tobacco?

A. Not a great deal.

Q. If a human being comes down with a cancer that is known to be caused in the same place and location by chemicals in laboratory animals and you find that that human being has been exposed to those same chemicals through the oral cavity, would that give you some pause for concern about the origin of that cancer in a human being?

A. Everything else being equal, yes, sir.

Q. Has this tobacco company told you that there is one particular nitrosamine that was present in two particular brands of snuff for some period of time,

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although it may now be omitted in recent years, have they told you that there was such a chemical in the Copenhagen Snuff that Sean Marsee used?

A. No, sir.

Q. I take it you do believe that laboratory experiments and laboratory animals have some significance and relevance to human beings?

A. They have some significance, yes, sir.

Q. Now, you said that verrucous carcinoma was a variant of squamous cell carcinoma?

A. It is a variant, yes, sir. It is not a frank squamous cell. It can become a frank squamous cell.

Q. What is leukoplakia?

A. Leukoplakia is a clinical designation of a white plaque in the mouth.

Q. And do those sometimes turn malignant?

A. Yes, sir.

Q. They have frequently been associated with the use of smokeless tobacco?

A. That's correct.

Q. You have seen those in your own practice?

A. Yes, sir.

Q. There wasn't any question in your mind but what those leukoplakias were caused by the use of

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snuff, was there?

A. That's correct.

Q. You were aware that Sean Marsee had a leukoplakia several months before his maligngancy arose in the same spot?

A. On the tongue, yes, sir.

Q. On the left border of the tongue?

A. Yes, sir.

Q. Have you ever seen a snuff dipper pack his quid of snuff in his mouth?

A. Yes, I have. I have not observed it closely, but I have seen them place it in their mouth.

Q. Do you see how they use their tongue to do that?

A. I can't say that I have.

Q. I take it then it wouldn't come as any surprise to you that they take the tobacco and put it right there in their lip and take their whole tongue, move it over to the side so they can pack it and cure it, that wouldn't be a surprise to you, would it, Doctor?

A. I couldn't say. I have had no experience.

Q. Would it come as any surprise if you chewed bubble gum and you had to keep it over in that part

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of your mouth, after you say a few words, you have got to repack the bubble gum back there as it starts to unfold in your mouth?

A. Yes.

Q. Do you have anything else in your mouth besides the tongue that you can repack the bubble gum with?

A. No, sir.

Q. Are you aware of the literature that shows that these same chemicals that I was telling you about that cause cancer in the mouths of laboratory animals, are you aware of any literature that shows that these nitrosamines are floating around in saliva of snuff dippers but not in nonsnuff dippers?

A. I'm aware of the literature that says that there are nitrosamines in the snuff. I am not familiar with literature that shows the amount of nitrosamines in saliva, no, sir.

Q. You are just not familiar with that literature?

A. That's right.

Q. If the jury has heard it presented here from the experts on nitrosamines, you wouldn't dispute that then, would you?

A. No, sir.

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Q. All right. Doctor, as I recall, when you were asked about the causation of Sean Marsee's cancer, you said that you could not say with certainty that it was caused by his snuff. That's a direct quote, isn't it?

A. Yes, sir.

Q. You cannot say that it wasn't either, can you, sir?

A. It is possible.

Q. Have you seen a significant increase in these leukoplakic lesions in young people in recent years?

A. Yes, sir, I have, and I will tell you that they have all been at the site of the snuff.

Q. Yes. But you have seen a significant increase in these leukoplakic lesions?

A. Yes, sir.

Q. When did the lawyers for the tobacco company first contact you in this regard?

A. I think it was approximately a year ago.

Q. Is that the first contact that you had had with the tobacco industry?

A. Yes, sir.

Q. And how many articles have you published in the literature?

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A. A total of a dozen maybe. I'd have to count. I really don't know exactly.

Q. Are those the kind of articles that would show up in a search of the National Institute of Health's med-line data base?

A. Yes, sir.

Q. I only found four last January when I checked. They told me you were going to be a witness. Have you written a substantial number since then?

A. Are you talking about book chapters?

Q. No, I wasn't talking about chapters. I was talking about review articles, peer review journal articles.

A. I would have to look at my CV, but there's more than four, sir.

Q. You are aware that the literature reflects a series of tongue cancer cases in tobacco users?

A. I'm sorry?

Q. You are aware that the literature reflects a series of tongue cancer cases in tobacco users?

A. In tobacco, yes, sir.

Q. And that the journal article has a title and says "Tongue Cancer, a Preventable Disease"?

A. I don't recall that exact title.

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Q. Doctor, you would agree with me that use of chewing tobacco or snuff at the turn of this century used to be a much more common habit than it used to be today?

A. I understand it was, yes, sir.

Q. Back in 1921 in The Journal of the American Medical Association, there was published an article which is in evidence in this trial by the title of "Cancer of the Tongue, a Preventable Disease," by one Doctor Bloodgood. I believe Doctor Ackerman said he knew Doctor Bloodgood and he was a fine physician, Doctor Ackerman being of the right generation to have known Doctor Bloodgood.

Are you aware of this article?

A. No, sir, I am not.

Q. Are you aware that in this article it says, "Among 160 cases of cancer of the tongue, it is distinctly stated in the history of only two cases that the man did not use tobacco in any form"?

A. I will have to take your word for it. Again, I have not read the article. I have not studied the article.

Q. Doctor, I have underlined two short passages there. Would you read those to the jury.

A. You wanted me to read the entire -- just the

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part you have underlined?

Q. Doctor, either way. Start with "tobacco."

A. Okay. "Among 160 cases of cancer of the tongue, it is distinctly stated in the history in only two cases that the man did not use tobacco in any form. In both, there is a history of bad teeth for years, producing an area of irritation. In one, an ulcer formed later from the ragged tooth; and in the other a definite wound was produced by the ragged tooth.

"In all the old complete histories and in all the recent records, it is distinctly stated that the men had used tobacco in one form or in another, usually to excess. In a number of the older histories with very incomplete data, no mention is made of the use of tobacco. The evidence, therefore, is overwhelming that the continuous and prolonged irritation from tobacco in some form is the chief factor in producing a lesion which may later develop into cancer."

Q. Will you read the next paragraph?

A. "The rarity of cancer of the tongue in women is additional evidence. In the few cases of cancer of the tongue in women, the patients have used tobacco, usually in the form of snuff by the mouth."

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Q. The tobacco company had not called that article to your attention before they asked you to come here and testify?

A. No, sir.

Q. Doctor, I want to show you an exhibit that has been previously admitted from 1982. This is from the tobacco company. It is from their director of research and development.

By the way, Doctor, do you know what a carcinogen is?

A. Yes, sir.

Q. What is a carcinogen?

A. It is an agent that has been shown to cause cancer.

Q. Would it surprise you that the director of research and development for the U.S. Tobacco Company said he didn't know what a carcinogen was?

A. I would be surprised, yes, sir.

Q. I thought you would. They are talking about "the new information in this latest paper concerns N-Nitrosomorpholine. We think we have a plausible explanation for this which is in the process of being checked... An agricultural suckering agent (MH-30) in common use contains a chemical which could easily be a precursor for this nitrosamine. If this

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actually proves to be the case, we are dealing with a material being pulled off the market and this problem should disappear with it."

Did you know that nitrosomorpholine has been causing cancer of the tongue in laboratory animals?

A. I would have to take your word for that, sir.

Q. There has been testimony of that.

A. Do you know that it has been causing cancer of the tongue at very low dose levels in laboratory animals?

A. I would like to have that question repeated.

MR. BRALY: Would the court reporter read that question back? I am not sure I am able --

(The last question was read by the reporter.)

A. I was not aware of that, no, sir.

Q. (BY MR. BRALY) Has the tobacco company prior to the time that they asked you to come and testify told you about the serious problem with nitrosamines and snuff?

A. Not specifically.

Q. Do you have any idea how high the levels of nitrosamines are?

A. In the saliva?

Q. In the snuff itself.

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A. In the snuff itself. No, I could not tell you that, --

Q. You don't?

A. -- the level.

Q. You don't know that with respect to saliva either, I gather, --

A. No, that's correct.

Q. -- based on your earlier testimony? Doctor, you heard back in the 70's that there were some amounts of nitrosamines that were found in bacon for a period of time; do you recall that?

A. Yes, sir.

Q. Do you know, have any idea about the levels of nitrosamines in snuff being as much as, say, ten times higher than those that were found in bacon?

A. I was not aware of that.

Q. Would that concern you a little bit if it were true?

A. I don't know the chemical ramifications of that.

Q. Would it concern you if it was as much as 50 or a hundred times higher?

A. I don't -- I don't have the biochemical background to make a comment.

Q. Doctor, I want to show you an exhibit that

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has been admitted into evidence. So on a logarithmic scale here -- the reason we put it on a logarithmic scale, because if we put it on a linear scale, it would have gone out the roof; okay?

It shows the levels of nitrosamines found. These are regulated by the government, beer and bacon and rubber baby bottle nipples, were all being less than 10 parts per billion. This shows the levels that are found in all the different snuffs that were tested in this particular literature report in 1981.

These little red marks show the levels that were found in Copenhagen Snuff; and if you count them up, there is one, two, three, four, five of the seven carcinogenics nitrosamines that are found in Copenhagen snuff that are the highest found in any snuff.

Did the tobacco company tell you that before they asked you to make an opinion about whether Sean's Marsee's use of snuff might have caused his cancer?

A. No, they did not.

Q. Did they even tell you what brand of snuff he used?

A. I don't recall whether they told me or whether I read it in the reports, but I knew that it

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was Copenhagen.

Q. Doctor, if you will, I don't have the plastic stay on this one, so I will have to do it this way.

These two brands right here, two and three, are Skoal and Copenhagen. These are the levels of that N-Nitrosomorpholine that has been causing lung cancer. It is not found in the any of the Swedish snuffs. It is not found in any other brand of U.S. snuff, except in very small amounts.

Did they tell you that those two brands had the highest level of nitrosomorpholine found in any snuff brands?

A. No, sir.

Q. Doctor, do you know of a Doctor Frederick McGuirt?

A. Frederick McGuirt?

Q. At Bowman Gray?

A. No, sir, I do not recall that name.

Q. Do you know of a Doctor Kent Westbrook at the University of Arkansas?

A. I know Westbrook, yes, sir. I know his name.

Q. You haven't done an epidemiological study on the causes of oral cancer, have you, sir?

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A. No, sir. I have participated in a project that is currently being evaluated. I do not have the results yet.

Q. Did you know that Doctor Westbrook had done such a study?

A. Not specifically.

Q. Let me hand you his paper. In particular, the reason I am doing this, Doctor, is on this question of squamous cell carcinoma. Would you look at the second page of the study?

Just briefly, this involved 55 females, cancer patients at the University of Arkansas Hospital, in a case control study. I think he found 51 of the 55 used snuff and that only a couple or so of the controls used snuff.

But what I am interested in in this article, Doctor, is the tumor characteristics down at the bottom of the second page. See where it says "tumor characteristics" there?

A. Yes, sir.

Q. Would you read that paragraph?

A. "Most of the cancers originated in the buckle mucosa -- " that's cheek " -- 50 percent. "The lower gum was the primary site in 42 percent, the upper gum in 4 percent, and 4 percent were

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indeterminable. Many of the cancers developed at the exact site where the snuff was held although this could not be determined accurately in many cases. However, of those in which the site relationship could be determined, 14 of 15 patients held the snuff at the site of the cancer.

Q. Would you read the next paragraph?

A. "The average tumor was 3 centimeters in diameter (range from one to nine centimeters). The tumors were described as exophytic in 52 percent, ulcerative in 28 percent, and both exophytic and ulcerative in 20 percent. Tumors were frequently thick and white in gross appearance. Leukoplakia of adjacent mucosa was associated with the neoplasm in most patients."

Q. Would you read the next paragraph now?

A. "Microscopically, the lesions were all squamous cell carcinomas. Some of them were of the typical verrucous carcinoma type (10 percent), while most were invasive well-differentiated squamous cell carcinomas. A few were anaplastic. However, they covered the entire histologic spectrum of squamous cell carcinoma."

Q. Doctor, isn't what he is saying that these tumors in these snuff dippers can cover the entire

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histologic spectrum of squamous cell carcinoma?

A. He made the statement that it could cover the entire histologic spectrum.

Q. And that was based on his observation of these 55 snuff dippers?

A. That was his observation, yes, sir.

Q. He trained at M. D. Anderson, didn't he?

A. I don't know where he had his training, sir.

Q. Doctor, have you reviewed the findings of the Surgeon General of the United States with respect to the health hazards of snuff?

A. I have reviewed the document, yes, sir.

Q. Do you agree with the findings of the Surgeon General?

A. I have read the document.

Q. Doctor, let's make this simple and maybe short. Would you look at the preface, the first page of the preface.

A. Yes, sir.

Q. With triple "i" at the bottom?

A. Uh-huh.

Q. Do you see there in the second paragraph of the first sentence?

A. Yes, sir.

Q. Do you see what that says? Would you read

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that first sentence?

A. "After a careful examination of the relevant epidemiologic, experimental and clinical data, the committee concludes that the oral use of smokeless tobacco represents a significant health risk."

Q. The next sentence?

A. "It is not a safe substitute for smoking cigarettes."

Q. And the next one?

A. "It can cause cancer and a number of noncancerous oral conditions and can lead to nicotine addiction and dependence."

Q. Then he's got a list of the major overall conclusions in the report. The first one deals with how many people are using it.

Would you read the second paragraph, the second numbered paragraph?

A. Yes, sir.

Q. The first sentence.

A. "The scientific -- "

I'm sorry.

Q. The first sentence.

A. "The scientific evidence is strong that the use of snuff can cause cancer in humans."

Q. Doctor, do you agree with that finding by

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the Surgeon General of the United States?

A. Yes, sir, I do.

Q. Doctor, can you tell this jury any reason at all why the smokeless tobacco industry should not have been putting warnings on its products going back to the time of Doctor Bloodgood or Rosenfeld and Callaway in 1963 when they identified snuff dipper's cancer and gave it a name? Is there any reason at all why snuff dippers and especially young snuff dippers and their parents should not have been alerted to the fact that there was a disease out there people like yourself called snuff dipper's cancer?

A. I am not in a position to have the background to be able to make a determination as to when warnings should or shouldn't be put on products. It's my personal opinion because of various adverse health effects of smokeless tobacco that a warning would be appropriate.

Q. Did you know, Doctor, has the tobacco company told you when they learned that they had these carcinogenic chemicals in their snuff?

A. They have not specifically told me of a date, no, sir.

Q. Do you know of that date?

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A. No.

Q. Do you have any idea what it was?

A. I would be guessing.

Q. Did you know, Doctor, that the evidence in this case, as a matter of fact, the company's own documents show that they found out in 1974 that they had the highest levels of nitrosamines in their snuff products of any other consumer product sold and designed to go in the mouths of human beings?

A. I would have to take your word for that.

Q. Doctor, did you know that they found that out two years, maybe two-and-a-half or three years before Sean Marsee started using snuff?

A. If that date is correct, yes, sir.

Q. Sean Marsee was born in 1964. He started using snuff when he was about 12 years of age.

Doctor, with respect to this latency period, did you know that the evidence in this case has shown that nitrosomorpholine can induce cancer in laboratory animals in less than two years?

A. In itself?

Q. Yes, sir.

A. As a chemical.

Q. Yes, sir.

A. I'll again have to take your word for that.

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Q. Did you know that the evidence in this case in general about nitrosamines is that it doesn't make any difference how long the animal or the life span of the animal is, once you start administering this stuff in suitable doses that in a couple of years you are going to get cancer in animals for two or three years or five or six years or even 50 years?

A. Once again, I will take your word for that.

Q. The tobacco company didn't explain any of that to you before they asked you to render an opinion in this case?

A. No, sir.

MR. BRALY: Nothing further of this witness, Your Honor.

THE COURT: Mr. Jennings.

MR. JENNINGS: I have some redirect.

REDIRECT EXAMINATION

BY MR. JENNINGS:

Q. Doctor Helfrick, with regard to the paper of Doctor Westbrook, do you still have that in front of you?

A. No, sir, I do not.

(Handed to the witness).

Q. According to my copy, if you will look at the subhead "Procedures and Materials Used."

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Do you find that section at the top of the page?

A. Yes, sir. Yes, sir.

Q. It says, "The records of all female patients with cancer of either the superior alveolar ridge, buccal mucosa or inferior alveolar ridge seen at the University of Arkansas for Medical Sciences from 1955 through 1975 were reviewed."

Have I read correctly?

A. That's right, yes.

Q. So he wasn't looking at patients with oral cancer; he was looking at patients with cancer of either the gum or the cheek; is that correct?

A. Well, we consider gum and cheek oral cancer, the oral cavity, but he was not speaking of cancer of the tongue, per se.

Q. But he wasn't even speaking of oral cancer in general.

A. No, sir, a specific site.

Q. He specifically limited --

MR. BRALY: Your Honor, I prefer that he ask specific questions in the direct.

THE COURT: Don't let --

Q. (BY MR. JENNINGS) Did he limit the subject of the patients to those who had the lesion at a

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specific site?

A. It was -- yes, sir.

Q. Could a patient get in the study if the patient had a lesion other than at the buccal mucosa or gum?

A. It was not in the protocol.

Q. All right, sir. Incidentally, the alveolar ridge is the gum; is that correct?

A. That's correct.

Q. And the buccal mucosa is the inside of the cheek?

A. That's correct.

Q. Now, you have been asked questions that seem to indicate that people who don't use tobacco don't get cancer. Is that true? Oral cancer?

A. No, sir, that's not true.

Q. As a matter of fact, you have had four cases yourself in young people who did not use tobacco at all; is that right?

A. That's correct. I have not had a young patient who did use tobacco have cancer.

Q. Is it true that if tobacco was banned from the face of the earth, we would still have oral cancer?

A. Yes, sir.

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Q. Are all leukoplakias caused by tobacco?

A. No, sir.

Q. Do you find leukoplakia in the patients who have never used tobacco?

A. Yes, sir.

Q. With frequency?

A. Well, relatively frequently. Leukoplakia is a response of the mouth to any irritant.

Q. And then it does occur without the use of tobacco with frequency; is that right?

A. Yes, sir.

Q. Doctor, you have been asked about the literature. I don't believe that Mr. Braly referred to any literature involving young people with tongue cancer, did he?

A. No, sir.

Q. I have had a chart prepared here that shows 14 papers that involve the subject of young people with tongue cancer. Are you familiar with any of that literature?

A. Yes, sir, a number of those I am, uh-huh.

Q. Could you tell us what ones you are familiar with?

A. Byers, No. 3; 14, Chapman, for sure. A fairly recent article, Patel, '76, rings a bell.

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Again, I may have read the others, also, but I could not specifically tell you which ones.

Q. Doctor, what do you do about keeping up with the literature?

A. I try to, because of the tremendous volumes of literature, try to limit in-depth reading to articles I think provide new information, scientific information.

Q. Would you keep up with articles if they came to your attention, would you read articles that involved a discussion of oral cancer generally?

A. Yes, sir.

Q. Tongue cancer?

A. Yes, sir.

Q. What journals do you subscribe to or have available to you?

A. Journal of Oral-Maxillofacial Surgery, The Journal of Oral Pathology, Oral Medicine and Oral Surgery, Plastic Reconstructive, New England Journal of Medicine, Hospital Medicine. Those are the ones I specifically subscribe to, and I certainly have many that are available to me.

Q. Do you have the publication "Cancer" available to you?

A. Yes, sir.

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Q. And I know you don't read every word of it, but do you peruse it?

A. Yes, sir. Yes, I do.

Q. In the course of your keeping up with the literature, are you aware of any publication that associates tongue cancer in young people with the use of tobacco?

A. No, sir.

Q. You were asked by Mr. Braly a number of questions about nitrosamines. Are you familiar with the statement that was made in a publication of the National Institutes of Health Consensus Conference, which I will read to you, "Repeated experimental studies in animals have failed to provide adequate evidence that chewing tobacco, snuff or extracts derived from them, induce cancer."

Have you heard that statement before?

A. Yes, sir, I have.

Q. Do you agree with that statement?

A. I agree with it in the sense that it has been reported in the scientific literature, yes, sir.

Q. Now, with regard to nitrosamines, if there is a chemical that is causing cancer and if it is contained in a substance that is coming in direct contact with the cheek and the gum, where would you

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expect the cancer to be?

A. Generally at the location of the application of the carcinogen.

Q. Are you aware from the medical records that there was absolutely no abnormality of Sean Marsee's mouth except for his tongue lesion?

A. That was my understanding, yes, sir.

Q. Doctor, with regard to the statement that you made that it was possible that snuff could have caused Sean Marsee's cancer, is it your opinion that it did or did not?

A. It was my opinion that it did not.

Q. Doctor, have you had any connection whatsoever with the tobacco industry?

A. I'm sorry, sir. I didn't understand.

Q. Have you had any connection whatsoever with the tobacco industry?

A. None whatsoever, other than this case.

Q. What is your feeling about the use of smokeless tobacco?

A. I abhor it. It's horrible.

Q. Is M. D. Anderson generally friendly toward the tobacco industry?

A. No, sir.

Q. Well, Doctor, why are you here?

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A. I'm concerned that the wrong conclusion is going to be drawn in this case, that the scientific merits are not there, that if the conclusion is drawn that it was simply the fact that this young man's use of snuff caused his tongue tumor, then the scientists around the world are not going to delve into and continue to delve into those other aspects that I think were more than likely involved in the development of his tumor.

Q. Doctor, from the cross-examination by Mr. Braly, have you changed your opinion in any way that snuff did not cause Sean Marsee's tongue cancer?

A. I have not.

MR. JENNINGS: Thank you.

RECROSS-EXAMINATION

BY MR. BRALY:

Q. Doctor, the studies that he's referred to over there, did any of those studies come to the conclusion that the use of snuff is not a cause of cancer?

A. They did not come to that conclusion.

Q. I didn't think so. Now, so all these studies -- you don't know this, but Mr. Jennings has been referring to these studies since the first day of this trial a month ago. None of those studies

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that Mr. Jennings has been referring to for a month now come to the conclusion that snuff does not cause cancer, so far as you know?

A. They did not come to that conclusion that I am aware, no, sir.

Q. Do you think these gentlemen that Doctor Bloodgood referred to back to the time when the use of oral tobacco was more common than today, do you think those people applied their tobacco with their tongue? Do you think they kept it in the normal place?

A. I am very uneasy about commenting on that article since I have not read it and have not studied it.

Q. Now, sir, isn't it true that, I think, with only a single exception in all these -- I haven't read this one down here from '86 yet -- that all these studies that are on the board, with the possible exception of that one and the one in India, where they mentioned oral tobacco in India there, No. 5, nobody even mentioned an investigation of snuff, didn't say in the paper report that they had even asked if their patients were using snuff?

A. I would have to review the literature, because -- on these 20 articles, but it was my fairly

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clear recollection that in the conclusion in the large -- the vast majority of those is that in fact the underlying theme was that there was not a significant history of alcohol or tobacco abuse as there is in the adult population.

Q. Alcohol or smoking, Doctor. I didn't ask about snuff and chewing tobacco. Do you recall them asking about snuff and chewing tobacco?

A. I don't know if they specifically stated if that was asked or not.

Q. A number of them, one of them was a renal transplant patient?

A. Yes, sir.

Q. And one of them had radiation for a hemangioma?

A. Yes, sir.

Q. Some of them pipetted chemical carcinogens?

A. Yes, sir.

Q. A lot of other etiological causes in there, weren't there?

A. Yes, sir.

Q. Doctor, apparently sometime before you came up here, you had this last discussion that you had with Mr. Jennings about being concerned about the wrong conclusion being drawn.

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A. Yes, sir.

Q. But in the process of reaching that conclusion, you had not been told about the particular nitrosamines that are in snuff and, in particular, about that one nitrosamine that has been shown to be causing tongue cancer in laboratory animals, have you?

A. I was aware of nitrosamines in snuff. I was not aware of all of the biochemical studies that you had mentioned. I was aware that they had been unable to reproduce in laboratory animals with the use of snuff malignancies.

Q. Yes, sir. Do you think it is possible to teach a rat to use snuff and keep a pinch between his cheek and gum?

A. There are ways scientifically to keep carcinogens in contact with the oral mucosa without having them chew it like a normal person does.

Q. And so they go in and they change the snuff once a day in the rat and they do that for two years because the rat doesn't live any longer than that, whereas Sean Marsee took his snuff, put it in his mouth in the morning, went to class and put it in again, kept it there all day long in class, swallowed the juice; okay?

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A. Yes, sir.

Q. Did that ten times a day and did it for six years. There is a difference, isn't there, Doctor?

A. There is a difference between, yes, that and the laboratory animal.

Q. A person would get a lot larger dose of those carcinogenic chemicals, wouldn't they?

A. I would -- the dose can be altered in the laboratory animal to equate that of the human.

Q. Yes, and they do that by giving pure chemical to the laboratory animal, just like they did with nitrosomorpholine, and that's how they can alter the dose. And when they did that, they had a live dose of 7 milligrams per kilogram of body weight, the animals were getting cancers of the tongue. That's what the evidence has been in this case, Doctor.

7 milligrams is something that you can shake out with one pass of the salt shaker, isn't it, Doctor?

A. Yes, sir.

Q. It would not be a collaterally erroneous scientific conclusion to say that chemicals that are shown to cause tongue cancer in animals when exposed and given to humans cause tongue cancer in humans. That wouldn't be something that would offend

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scientific sensibilities, would it?

A. It would require further investigation.

Q. Doctor, one thing Mr. Jennings has done that is of some particular concern to me. He quizzed you and one of the doctors yesterday about the fact that the quid is held in the cheek, that you would expect the cancer to arise there rather than maybe in the tongue.

Were you aware that they spent hours and hours cross-examining our nitrosamine experts trying to get them to tell this jury that nitrosomines were organ specific, that they pass through the buccal mucosa, went into the blood system and caused cancer as they circulated through the bloodstream? Did they tell you about that?

A. No, sir.

Q. That's a different story than what he was just asking you about, isn't it?

A. They are not analogous, no, sir.

Q. And then when they gave those nitrosamines in drinking water to laboratory animals, they cause cancer of the tongue. That's because maybe they passed through the system, caused cancer in the tongue or maybe because they were contact carcinogens; right, doctor?

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A. From either, yes.

Q. Maybe science doesn't know the answer to that yet?

A. That's right.

Q. And on that we could do a great deal more research, couldn't we?

A. Yes, sir.

MR. BRALY: No further questions.

REDIRECT EXAMINATION

BY MR. JENNINGS:

Q. Doctor, you have testified that none of those papers draw the conclusion that snuff doesn't cause cancer. Did they draw any conclusions with regard to whether or not snuff causes cancer in young people?

A. No, sir.

Q. They did not?

A. Did the articles draw the conclusion that snuff causes cancer?

Q. No. Did they draw a conclusion that snuff did not cause cancer?

A. Oh, no, sir.

Q. Sir?

A. No, sir, they did not.

Q. Do you remember the paper of Patel?

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A. Yes, sir.

Q. There were five Indian children?

A. Yes, sir.

MR. BRALY: Your Honor, is counsel going to impeach his own witness?

THE COURT: Overruled.

Q. (BY MR. JENNINGS) Did snuff cause tongue cancer in those five patients?

A. I believe that one of the five, there was a history of smoking or tobacco use, but in the other four there was not, as I recall.

Q. Well, if the other four did not use tobacco, then tobacco didn't cause their cancer, did it?

A. That's correct.

Q. So the necessary conclusion from that paper is snuff didn't cause cancer?

MR. BRALY: Your Honor, --

THE COURT: Don't lead the witness.

MR. BRALY: Thank you, Your Honor.

Q. (BY MR. JENNINGS) Doctor, what conclusions were drawn from those papers in most of them?

A. In most of them, that the etiology, a cause for the tumors was not evident; that the tumors were very rapidly growing tumors. Generally they are the anaplastic, meaning they are very -- in rapid-growing

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virulent type and that, unfortunately, in some, but not all of them, but in some of them the patients did not respond to treatment as you might expect an adult to.

Q. Did any of the papers draw the conclusion that snuff caused tongue cancer in young people?

MR. BRALY: Objection. Again, Your Honor, he's leading the witness.

THE COURT: Overruled. Overruled.

MR. FINNEGAN: Repeat the question, please.

Q. (BY MR. JENNINGS) Did any of the papers reach the conclusion that snuff causes tongue cancer in young people?

A. No, sir.

THE COURT: Anything further?

REDIRECT EXAMINATION

BY MR. BRALY:

Q. They didn't address that question, did they, Doctor? Those papers.

A. They -- most of the papers, if not all of them, addressed habits in general. Snuff specifically, I could not say.

Q. Doctor, if the issue is snuff and cancer in young people, it would first have to be demonstrated that young people use snuff, wouldn't it?

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A. Yes, sir.

Q. Are you aware that in that same Surgeon General's report one of the principal concerns of the Surgeon General is that it has only been in the last decade or so that young people have started to use snuff in large numbers?

A. Yes, sir.

Q. And that there has been testimony in this case from, for instance, the Bogalusa Heart Study, showing that in 1976 that among 12-year-olds that only four percent of the people were using snuff and that by five years later we had gotten the 450 percent increase? You are aware of that?

A. Yes, sir.

Q. I mean you have seen the results in your practice --

A. Yes, sir.

Q. -- every day?

A. Yes, sir.

Q. That wouldn't come as any surprise to you that prior to 1975 we didn't see any tongue cancers in young snuff dippers because there weren't any young snuff dippers, were there, doctor?

A. That's correct. A few.

Q. And almost all of these case series involve

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a period of time prior to the time that we have seen this dramatic rise in the use of snuff by young people?

A. A good number of them, yes, sir.

MR. BRALY: Nothing further, Your Honor.

REDIRECT EXAMINATION

BY MR. JENNINGS:

Q. Doctor, did you see a lot of tongue cancers that did not involve the use of tobacco in young people? I say a lot. Did you see cases of nonusers?

A. I have not seen a case that was a user.

MR. JENNINGS: Thank you, sir.

RECROSS-EXAMINATION

BY MR. BRALY:

Q. You don't deny that they are out there, do you, Doctor?

A. I'm not going to speculate on that, sir.

Q. Okay. You don't deny that they are out there and other surgeons are treating them, do you?

A. I wouldn't know. I would hope if they are, they are reporting them.

Q. If they had just been using snuff for the last ten years, you would only just now expect them to be starting to show up like Sean Marsee's did three years ago?

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A. That's difficult to say the -- again with the natural history of some patients 50 years.

Q. Yes. But we have got a carcinogen that we know can cause cancer of the tongue, don't we, Doctor?

A. Excuse me, sir?

Q. There is a carcinogen out there that is in snuff that we know can cause cancer of the tongue, isn't there, Doctor?

A. That's what you have told me this morning.

Q. Assuming that's the evidence, it's out there and young people have only been getting exposed to it in the last decade; right, doctor?

A. Generally.

Q. All right.

THE COURT: You may step down. You are excused.

THE WITNESS: Thank you.

THE COURT: We will take our midmorning recess, ladies and gentlemen.

Everyone remain seated while the jury exits until 11 o'clock.

Court will be in recess.

(A brief recess was here had.)

THE COURT: Be seated. Call year next

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witness.

MR. JENNINGS: Doctor Hansen. Come forward, please, Doctor, go the witness chair and be sworn, please.

LOUIS S. HANSEN, D.D.S.,

called as a witness on behalf of the defendant, being first duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. JENNINGS:

Q. Doctor, if you will adjust that microphone -- talking about the black one there --

A. Yes, sir.

Q. -- so it can pick up your voice. Thank you, sir.

State your name please.

A. Louis Hansen.

Q. Where do you live?

A. [DELETED]

Q. What is your business or profession?

A. I'm a oral pathologist.

Q. Where are you employed or where do you practice?

A. I am employed by the University of California in San Francisco.

Q. And what is your position there?

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A. I'm professor and chairman of the Division of Oral Pathology.

Q. What are your duties in that connection, Doctor?

A. My principal job is that of an oral diagnostician, a consultant oral diagnostician. I am a pathologist, and I have a laboratory. What happens is that when the dentists, primarily dentists, it could be physicians, but mostly dentists, when he has a patient that has something that he sees, looks in the patient's mouth and he sees something that maybe does not know quite what it is, quite how to take care of it, he needs some help in arriving at the diagnosis, he does what we refer to as a biopsy. And most people know what this is. They take either all or a small portion of it, puts it in a little bottle, sends it to me, and my laboratory processes this tissue. I read it on the microscope and return a microscopic diagnosis back to that particular dentist. That's my principal work.

Q. All right, sir. Now, Doctor, let me ask you, if I may, about your educational background. How have you prepared yourself to do this work?

A. Early, post high school?

Q. Where did you go to college?

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A. Well, Glendale College in California, which I went two years, where I received an AA certificate. Following this I spent four years at the University of Southern California, from which I received a bachelor of science degree and Doctor of Dental Surgery degree. Further, as far as education is concerned, it was in 19 -- 1949 and 1950 in which I had a year's dental internship in oral surgery at the Los Angeles County General Hospital.

Following this, in 1950 -- 1952, I matriculated at the University of Michigan for one's work in pathology. Following this the next year I went to the National Naval Medical Center in Bethesda, Maryland, in which I had a year's residency in pathology, in oral pathology. The following year I spent part time at Georgetown University, at which time I received a Master of Science degree in oral pathology.

Later on, in the 1970's I went back to school again, this time to Pepperdine University where I received a master of business administration.

Q. Doctor, I notice there was a break in your educational career between '41 and '49. Why was that?

A. At that time, 1941, I entered into the

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Navy. I was commissioned a naval dental officer, which I spent 26 years in the navy, which I retired after 26 years as a captain in the Naval Dental Corps. It was during this period in which I was -- had my further -- my postdoctoral education that I just spoke of.

Q. Then you were on active duty in the Navy from '41 until when?

A. Until 1967, 26 years, full time.

Q. You were on full-time active duty during that time?

A. Absolutely.

Q. All right, sir. Then at the conclusion of your service in the Navy, where did you go?

A. I retired because I -- from the Navy to accept an appointment as professor and chairman at the University of California, San Francisco. That's where I am now.

Q. And what year was that?

A. 1967.

Q. So you have been there now going on 20 years?

A. 19, that's correct.

Q. Doctor, what dental associations or boards or so forth are you a member of?

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A. I consider the principal ones the American Academy of Oral Pathologists, my specialty organization, which I am a past president and have served in that organization for many years in various committees and that type of thing. In addition, I am a past president of the American Board of Oral Pathology. You may be familiar with the board system of specialists in this -- in this country. And I served not only as president, but also served on the examining committee for eight years. The examining committee meets and the board accepts candidates who present themselves before the board for examination for competency in this specialty, whatever it may be, in this case oral pathology.

Q. Thank you, sir.

Doctor, I want to direct your attention to the medical records of Sean Marsee. Have you seen those records?

A. Yes, sir, I have.

Q. And you know the history of his disease and his medical treatment.

A. Yes, I do.

Q. And you know of his surgeries, namely, three of them, and his ultimate death in February of 1984.

A. Yes, sir.

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Q. Are you aware of where he placed the tobacco that he used in his mouth?

A. It is my understanding that he placed it between his -- in his lower lip and the gingiva or gum and the --

Q. All right, sir. On which side, if you know?

A. If I recall, it was on the right side. I'm not certain of that.

Q. Doctor, do you know his age at the time that he developed his cancer of the tongue?

A. It was just about one year prior to his death, so he would be about 17, as I recall.

Q. I think he was 18, and I will ask you to assume that --

A. All right.

Q. -- for the purpose of this testimony.

A. (Nodding yes).

Q. And you are aware from the medical information that his cancer was on the right lateral border of the tongue; is that correct?

A. That's correct, that's correct.

Q. Doctor Hansen, from your knowledge of the medical records -- incidentally, let me ask you if there is anything else that you feel you need to know in order to express an opinion or any other

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assumptions that you make that I haven't asked you about that enter into your opinion?

A. No, sir, I can't think of any.

Q. All right, sir. Based on your knowledge and information, as we have gone over it, do you have an opinion as to whether or not Sean -- oh, incidentally, I should include that he had used Copenhagen Snuff for approximately six years. Did you understand that to be case?

A. That's what I understand, yes, sir.

Q. Also, did you see slides of tissue specimens of Sean Marsee?

A. I most certainly did.

Q. And did you examine those microscopically?

A. I certainly did.

Q. Tell us what you found from those slides.

A. I found that -- that the -- that Sean died of a very virulent malignant cancer, which we call a moderately differentiated -- which I call a moderately differentiated squamous cell carcinoma, sometimes referred to as papillar squamous cell carcinoma, but this was microscopically. It was -- it was a -- it was highly malignant.

Q. All right, sir. Now, based upon all of the information that we have discussed, do you have an

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opinion as to whether or not snuff caused the oral cancer, the tongue cancer, of Sean Marsee?

A. I have an opinion.

Q. What is that opinion, Doctor?

A. That -- that the snuff did not cause Sean Marsee's death.

Q. And would you tell the jury what the basis of your opinion in that regard is.

A. Yes, I will. There are a number of reasons why I came to this conclusion. First is the age of the patient. When we talk about carcinoma that appears in snuff dippers, we have a pretty good idea, our knowledge tells us that in these patients that the age of the patient is -- they are elderly people. I am talking 60, 70, 80, 90 years up. This is the age group in which the so-called snuff dipper's carcinoma occurs. Wherein Sean's case, he doesn't fit in this age group at all. He's a teenager. I can't see the relationship there. That's one reason.

No. 2 was the duration of use of the snuff. In the typical snuff dipper who develops a carcinoma, and these are relatively rare, by the way, they -- the duration of use goes on for years, 30, 40, 50, 60, 70 years of use before the carcinoma develops.

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In Sean's case, this was only a matter of approximately six years, as I understand it, that he used snuff. So here is another enormous difference. That's No. 2.

No. 3 was the location. I think it is extremely important, the location of the carcinoma. We know where Sean's carcinoma occurred. It occurred on the lateral margin of the tongue; whereas, in the snuff dipper, I know of no reported cases in which a carcinoma of the tongue has been caused by the use of snuff. All of those several hundred that have been reported in the literature have all been at the site in the buccal mucosa or between the cheek and gum where the snuff has been in contact for these many, many, many years.

So, in this particular case, and when we are reviewing the records, that if -- if Sean had developed a squamous cell -- I mean a snuff dipper's carcinoma, it would have been at the site where he used the snuff and from the medical records that area was perfectly clear, there was nothing in that area to indicate that there was any malignancy or premalignancy.

The next thing that convinced me that there was -- that there was no relationship between the

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snuff and the -- and Sean's death was the -- the -- the -- the type of cancer that he had.

Now, we know something about what snuff carcinoma looks like, both clinically and microscopically. Clinically, it is exophytic, that means an outward group, it is pebbly, white, usually white, and that it's -- we also know that it is very slow growing, it takes years to develop over a long period of time. We also know that snuff dipper's carcinoma is -- is relatively mild, in that it does not metastisize.

There are -- perhaps ten percent of snuff dipper's carcinoma (10 or 20 percent) still will develop into a papillary squamous cell carcinoma, in which this particular type will metastisize but it is very reluctant to do so, very slow to do so. So here we have two types, related types, of carcinoma in a snuff dipper, the verrucous type and the papillary squamous cell type in which the prognosis is very good, because in this case the reluctance to metastasize, treatment usually works very well, because you can get rid of it.

Now, in Sean's case, this was not the case at all. This, in his case, he had a very rapidly-growing type of carcinoma, clinically, as we

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know, I mean from the onset of the disease until his death was just about 12, 13 months, something like this.

This, clinically it behaves in a completely different manner. Microscopically, there is differences, too. Because in snuff dipper's carcinoma this well differentiated type is -- is different in that it has -- the -- what we see microscopically, it is well differentiated as opposed to the poorly differentiated or moderately differentiated, which we see -- which we saw in Sean. As a matter of fact, when I first saw the slides, they were represented to me instantly recognizable as a -- as one of those types in which it is very malignant as opposed to the much, much less malignant and slow-growing snuff dipper's carcinoma.

Q. Doctor, --

A. And finally --

Q. Excuse me.

A. May I just finish.

I want to -- I see what you have up here, and that's this tongue cancer in young people. This to me was the final thing that decided -- helped me make up my mind, because with all these 40 some-odd

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cases which I have seen in the literature, that it appears that there is a very special brand of tongue cancer that occurs in children and adolescence, and this is the type that Sean had. As far as I know, in reviewing these cases here that we know, there is no known etiologic factor that causes this type of cancer in young people.

Q. Thank you, Doctor.

MR. JENNINGS: You may cross-examine.

CROSS EXAMINATION

BY MR. BRALY:

Q. Doctor, you do not have a Ph.D. degree?

A. No, sir.

Q. You got a master's in oral pathology?

A. Yes, sir.

Q. It is possible to obtain a Ph.D. in that subject, isn't it?

A. Yes, sir.

Q. But you have not done that?

A. No, sir.

Q. Doctor, if you will forgive me a minute, I think you are the third oral pathologist -- and there is a fourth pathologist -- that the tobacco company has called to the witness stand in the last two days. I take it that -- do I recall your

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testimony correctly that you said this was a moderately differentiated squamous cell carcinoma?

A. In Sean's case? Yes, that's from my examination, right.

Q. And I take it, then, that would be different from Doctor Ackerman's testimony that it was undifferentiated.

A. I don't know what Doctor Ackerman testified to. I can't comment.

Q. If he did testify that it undifferentiated, then your opinion would be different?

A. These are arbitrary divisions. We generally divide cancer, squamous cell carcinoma into three different types, that is, well differentiated, moderately differentiated, poorly differentiated or possibly undifferentiated. And there is overlapping between these. See, it is very subjective.

In other words, one pathologist can look at it and say well, I think this is moderately differentiated; the other person may say it's poorly differentiated.

But what will not happen is two pathologists will not disagree on well differentiated to poorly differentiated. That's a wide gap.

Q. Do I understand that you gave us four

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categories: well-, moderately-, poorly- and undifferentiated?

A. The poorly differentiated and undifferentiated sometimes are lumped together so it would be three or four.

Q. But at any rate, Doctor, to answer my question, if Doctor Ackerman's testimony was that it was undifferentiated, your testimony is different and it is moderately differentiated?

A. But that, as I have also testified --

Q. Excuse me, Doctor. My question --

A. Beg your pardon?

Q. My question.

A. Repeat the question, please.

Q. Yes, be glad to.

If Doctor Ackerman's testimony was that it was undifferentiated, your testimony is that it is moderately differentiated and that's different, isn't it?

A. It is overlapping. It may not be different.

Q. The testimony is different, isn't it, Doctor?

A. Well, different words, yes. We may be saying the same thing.

Q. Is undifferentiated the same as moderately

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differentiated?

A. In my opinion, no.

Q. Okay. So then you agree Doctor Ackerman presumably knows what he's talking about?

A. Oh, I certainly do.

Q. And you assume that you do. What I am getting at is different pathologists can read it differently.

A. Yes, that's right, within limits, within limits.

Q. Now, can you tell under the microscope by looking at the tissue specimen the age of the patient?

A. No, sir, I can't.

Q. Plain old garden variety squamous cell carcinomas occur in older snuff dippers just like they did in Sean Marsee, don't they?

A. Repeat that.

Q. Plain old garden variety squamous cells carcinoma, aggressive squamous cell carcinoma --

A. Yes, sir.

Q. -- occur in older users of tobacco just like they did in Sean Marsee, don't they?

A. The evidence --

Q. "Yes" or "no," Doctor?

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A. I would say no.

Q. You would say "no." You don't recall any reports of that anywhere in the literature?

A. There may be a very extremely rare case, perhaps the most I can tell you is what we do see in the literature, if you are interested.

Q. I would be glad to get into that, Doctor.

A. Okay.

Q. I intend to.

A. All right.

Q. Isn't it true that these squamous cell carcinomas occur in snuff dippers across the entire histological spectrum?

A. I have never seen an undifferentiated one in a -- in a snuff dipper.

Q. What does anaplastic mean?

A. It means -- anaplastic means that it is -- micrqscopically that it's far away from its normal counterpart; for example, an anaplastic squamous cell then would be so poorly differentiated, it could be that you might not even be able to tell that it is a squamous cell; it may be that differentiated.

Q. So that would be at one extreme, the anaplastic cells, the undifferentiated?

A. That's right, yes.

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Q. So if we say that these -- if we describe the entire histological spectrum, okay --

A. Uh-huh.

Q. -- we cover everything from well differentiated to moderately differentiated, to poorly, to undifferentiated?

A. Yes, sir.

Q. On anaplastic --

A. Yes.

MR. BRALY: Excuse me one moment, Your Honor.

Q. (BY MR. BRALY) Doctor, before we begin this short exercise, you are not a surgeon that goes in and treats these patients with head and neck cancer.

A. No, sir.

Q. Your principal function is to look at the tissue specimens under the microscope.

A. Correct.

Q. You are not an oncologist?

A. No, sir.

Q. You have never done a epidemiological study to try to determine the causation of oral cancer?

A. No, sir.

Q. And you are not an epidemiologist, either?

A. No, sir.

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Q. Let me call your attention to an article that was done involving some 55 female head and neck cancer patients, done by head and neck surgeons at the University of Arkansas. Have you heard of that study?

A. What is the -- may I look, examine the --

Q. Sure.

A. Called "Snuff Dipper's Carcinoma."

A. No, I am not familiar with this.

Q. All right. I believe in your direct testimony you said that you had never seen an undifferentiated squamous cell carcinoma in a snuff dipper.

A. That's correct.

Q. All right. Let me show you somebody that treats snuff dipper's cancers, that writes up epidemiological studies that has.

Would you look at the bottom of the second page. See where it says "Tumor Characteristics"?

A. Yes, sir.

Q. See if I can read this correctly, Doctor. "Tumor characteristics - Most of the cancers originated in the buccal mucosa (50 percent). The lower gum was the primary site in 42 percent, the upper gum in 4 percent, and 4 percent were

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indeterminable. Many of the cancers developed at the exact site where the snuff was held, although this could not be determined accurately in many cases."

Go to the next paragraph, Doctor, did I read that correctly?

A. So far, yes.

Q. All right. Next paragraph. Let's talk about the tumors. "The average tumor was three centimeters in diameter (range from one to nine centimeters). The tumors were described as exophytic in 52 percent." What does that mean, does that mean they are growing out like this wart-like condition you described?

A. Yes, sir.

Q. And that they were ulcerative in 28 percent?

A. Yes, sir.

Q. That's the opposite, isn't it?

A. Not necessarily. They could be both exophytic and ulcerative.

Q. Well, he describes those separately, though, doesn't he?

A. Yes.

Q. Okay. So he's got three categories. He's got those exophytic in 52 percent, ulcerative in 28 percent, and both exophytic and ulcerative in another

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20 percent?

A. Yes.

Q. So he clearly distinguishes between exophytic, ulcerative and those that are a combination of the two, doesn't he?

A. Yes. All right.

Q. "Tumors are frequently thick and white in gross appearance. Leukoplakia of the adjacent mucosa was associated with the neolplasm in most patients."

Did I read that correctly, Doctor?

A. Yes.

Q. "Microscopically," -- That's what you do, isn't it?

A. That's correct.

Q. "...the lesions were all squamous cell carcinomas. Some of them were of the typical verrucous carcinoma type."

How many, what percent of them?

A. It says 10 percent.

Q. That would have been five out of the 50 or five out of the 55?

A. Yes, sir, all right.

Q. "... while most were invasive well differentiated squamous cell carcinomas"?

A. Yes.

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Q. "A few were anaplastic."

A. Yes.

Q. "However, they covered the entire histiologic spectrum of squamous cell carcinoma."

A. Yes.

Q. That would indicate that they covered everything from well differentiated to moderately to poorly to anaplastic?

A. He didn't say how many were few.

Q. Yes. But you said you had never seen one.

A. No, sir.

Q. Okay. Now, you said that these snuff dipper's cancers didn't tend to metastisize?

A. That's correct.

Q. You haven't observed them to metastisize?

A. I don't -- here, I am not an oncologist. I don't follow patients. I don't treat patients. What knowledge I have is diagnosis of squamous cell carcinoma, that's No. 1, and what I read in the literature. What I read in the literature is for my knowledge.

Q. Don't you sometimes get these patients back a month or six months or a year later and have to look at the lymph nodes. You do that, too, don't you?

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A. No, no, I do not.

Q. You do not look at lymph nodes?

A. As a rule, no.

Q. You don't know if they ever metastisize in the lymph nodes or not, do you?

A. I know from the literature what happens.

Q. Well, let's look at this piece of literature, Doctor. The next paragraph. "Most of the lesions were localized to the primary site when first seen."

That was just like Sean Marsee, wasn't it?

A. Yes. Wait a minute, wait a minute, yes.

Q. On clinical examination --

A. Wait just a moment, just a moment. "Most of these were localized to the primary site when first seen."

Now, but it says here most of the cancers were in the buccal mucosa.

Q. Yes, sir, it sure does. That's what the study was, they picked buccal mucosa cancer?

A. Yes, sir.

Q. But the sentence says doesn't it that "Most of the lesions were localized to the primary site when first seen"?

A. So I would anticipate this is in the buccal

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Q. Do you remember what the paper says, Doctor?

A. No, sir.

Q. The jury has heard it, I am not going to go through it again with them.

Doctor, before you came here today, what did the tobacco company tell you about the carcinogenic chemicals that were in the snuff you were going to testify about?

A. They didn't tell me anything.

Q. Did you ask?

A. No.

Q. What did the tobacco company tell you about the snuff dipping history of young people in this country?

A. They didn't tell me anything.

Q. What do you know about the snuff dipping history of young people in this country?

A. What I have read in the literature.

Q. And tell us when has Copenhagen and Skoal tobacco become popular among young people?

A. I suppose it's been popular ever since it was first put on the market.

Q. Is that a supposition on your part?

A. Well, I understand from certain studies like Winn, for example, I mean that --

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Q. Does the Winn Study say it was Skoal and Copenhagen or does it say snuff?

A. Snuff, just snuff, right.

Q. Did you know there were differences in snuff, Doctor?

A. Yes, sir.

Q. Do you know what any of those differences are?

A. Slightly. There's moist snuff, dry snuff, so on, so forth.

Q. Do you know that the Winn patients by and large used the dry variety of snuff?

A. Yes, that's right.

Q. And the moist variety is something different?

A. All right.

Q. Did you know that moist variety is fermented?

A. I am not an expert on the manufacturing of snuff or tobacco, but I have heard this from --

Q. Do you know what the fermentation does to nitrates that occur naturally in the tobacco?

A. I have a vague idea.

Q. Tell us what your vague idea is?

A. I think -- I think if I remember correctly

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that a -- it may -- it may increase the amount of recoverable nitrosamines from the snuff.

Q. So it would have been possible, for instance, for the U.S. Tobacco Company to make a snuff that was not fermented and it would not have had as high a level of nitrosamines, right, Doctor?

A. I suppose.

Q. Nevertheless, for whatever reason he made the fermented variety and to your knowledge that increases the levels of nitrosamines, doesn't it?

A. Yes.

Q. Are nitrosamines carcinogenic chemicals, Doctor?

A. In humans?

Q. In animals.

A. Yes.

Q. Would you volunteer to be a subject for a direct human experiment where somebody was going to give you nitrosamines?

A. For what purpose?

Q. To see whether you would get cancer or not, Doctor.

A. No, that's why we -- that's why we use experimental animals.

Q. That's exactly right, Doctor. But if you

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wouldn't volunteer to take those nitrosamines to find out whether humans get cancer, knowing that information, do you think it is proper for the tobacco company to give those same chemicals to human beings without at least informing them of what they are doing?

A. To my knowledge, like any chemicals, not giving nitrosomines that have been extracted from -- from -- from snuff.

Q. Doctor, have they told you about the level of nitrosamines that are in their Copenhagen Snuff?

A. Yes.

Q. Have they told you how many times higher those levels are than what are found in other consumer products?

A. Has the tobacco company told me this?

Q. Yes.

A. I don't know where the information has come from. I am aware of this.

Q. Do you know that beer has got less than 10 parts per billion of nitrosamines?

A. I have heard this.

Q. Did you know that the beer industry went out and volunteered to cure their problem with nitrosamines?

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A. No, I didn't know that.

Q. Did you know the bacon people have got theirs down below 10 parts per billion?

A. All right.

Q. Do you know that there is a federal regulation on that?

A. All right.

Q. Do you know that baby bottle, rubber baby bottle nipples found that they had a few parts per billion and they did that because they were concerned about children, right?

A. All right.

Q. Why were they concerned about children?

A. I don't know.

Q. Because children when they get cancer it appears to be a very aggressive cancer, doesn't it, Doctor?

A. Yes.

Q. Now, Doctor, of course, now, nitrosamines in the tobacco industry aren't regulated and here's what we have got.

Can you read a logarithmic scale, Doctor?

A. I can see your scale all right.

Q. You do recognize that as a logarithmic scale, don't you?

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A. Yes.

Q. And why do scientists use logarithmic scales?

A. In order to condense the material on a smaller piece of paper, so --

Q. That's right. Because if we had to use a linear scale and use the same scale that is from here to here, we would have a hundred times this much or ten times this much here a hundred times and this would go right out the roof of this courthouse, wouldn't it, Doctor?

A. Yes, yes, sir.

Q. If I got a can of red paint and set up on the wall, and use a linear scale, have these little blue things down at the bottom and have those red lines go out through the roof of this little courtroom, wouldn't you, Doctor?

A. Yes.

Q. Okay. It doesn't surprise you, then, to find out that nitrosamines that are in snuff are there a hundred times or a thousand times more than any other consumer product designed to go in the mouths of human beings? You understand that, don't you?

A. Yes.

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Q. Now, let's go back to this business of when young people started using Copenhagen Snuff. Have you read what the Surgeon General had to say about that, Doctor?

A. About --

Q. Young people --

A. -- young people.

Q. -- using Copenhagen Snuff?

A. I recall something about that, about that, yes.

Q. And what do you recall about when this started happening?

A. The concern has been there's been a recent increase in the use by teenagers, as far as -- I don't know whether this is true or not. I mean it appears that there is some surveys which indicate that there recently in the past several years that there has been an increase in teenage use of snuff.

Q. As a matter of fact, Doctor, the Bogalusa survey down in Louisiana shows that in 1976 -- By the way, do you know how old Sean Marsee was in 1976?

A. I could calculate it.

Q. I will make it easy. He was born in '64?

A. All right.

Q. 12 years old?

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A. Yes.

Q. All right, Doctor. Now, for instance, the Bogalusa heart survey that has been testified to here shows that the 12 year olds in 1976, just kind of a funny coincidence, that there was 4 percent of them using snuff, and then it shows just five years later that there was 18 percent of them for a 450 percent increase.

A. Uh-huh, uh-huh.

Q. Doctor, that happened -- By 1976, there were four percent of them using snuff.

A. Uh-huh.

Q. Do you know when the tobacco company first started advertising Copenhagen and Skoal snuff on TV?

A. No, sir.

Q. Did they tell you that they started doing that the same year that the cigarette industry took their ads off of TV?

A. No, they did not tell me that.

Q. Did they tell you that they started doing that in 1971?

A. No.

Q. Did they tell you that starting in 1971, when they did that, that they started getting a tremendous increase in their sales?

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A. No.

Q. Did they tell you when they hired Mr. Garrison over here to start doing TV ads?

A. No.

Q. Did they tell you that they started doing that in 1974?

MR. JENNINGS: Excuse me, if the Court please, I object. This witness is here to testify as a medical expert on the cause of Sean Marsee's tongue cancer. He's not here as a marketing or advertising expert, and I don't think this is proper cross-examination.

THE COURT: Overruled.

Go ahead.

Q. (BY MR. BRALY) Did they tell you that in 1974, that they started using a popular football hero from the Dallas Cowboys?

A. They didn't tell me that.

Q. Doctor, I don't want to make a marketing expert out of you, that is not my purpose. My purpose is is that the vast majority of the people that are in these studies, for instance, Doctor Byers' study, there of 11, see the third one down before Pichler.

A. Yes, sir.

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Q. That included a study of 11 patients and every one of them was before 1983. It is not very likely that anybody they had a chance to use Copenhagen Snuff. As a matter of fact, Doctor Byers didn't mention snuff, did he? With the exception of the Indian study there and the Chapman study, which I haven't been furnished yet, I don't recall any of those that mentioned snuff. Some of them mentioned smoking and alcohol, but I don't recall any of them even asked if they mentioned snuff, do you?

A. You know --

Q. Do you, Doctor? Do you recall any of them specifically asked about snuff use? "Yes" or "no," Doctor?

A. No.

Q. Doctor, it would be pretty hard to find a snuff dipper's cancer in a 20 year old if he hadn't been using snuff, wouldn't it?

A. That's correct.

Q. Doctor, it's true that not all oral cancers occur in tobacco users. That's true, isn't it?

A. Yes, sir.

Q. We know that, we can set here and look at it?

A. Right.

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Q. As a matter of fact, Doctor, it's true, not all oral cancers in old people occur in tobacco users, either, do they?

A. Correct.

Q. But it is true, Doctor, that the vast majority of oral cancers occur in people who use tobacco?

A. Well, also many people use tobacco, too, I mean they don't develope a cancer.

Q. Doctor, you said earlier in your testimony that you had never heard of a tongue cancer in a snuff dipper. Do you recall that testimony?

A. Yes, I do.

Q. Doctor, in 1921, in the Journal of the American Medical Association-- Do you consider that an authoritative journal?

A. Pardon?

Q. Journal of the American Medical Association?

A. What year?

Q. 1921.

A. Yes, sir.

Q. Okay. Now, that was back at a time in this century when there was a lot more snuff and chewing tobacco used than there has been in recent times, right?

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A. I don't know if this is true or not.

Q. You don't know that, all right.

Are you aware, first, of the title of the article by a doctor by the name Bloodgood apparently who was a friend of Doctor Ackerman?

A. He said he was a good surgeon yesterday.

Q. The title of the article was "Cancer of the Tongue: A Preventable Disease." Do you see that, Doctor?

A. Yes, sir.

Q. Now, Doctor, would it surprise you to find in this article the following: "Among 160 cases of cancer of the tongue, it is distinctly stated in the history and in only two cases that the man did not use tobacco in any form."

It goes on to the next paragraph "The evidence, therefore, is overwhelming that the continuous and prolonged irritation from tobacco in some form is the chief factor in producing a lesion which may later develop into cancer."

Now, with specific respect to your testimony, Doctor, that you have never seen a tongue cancer in a snuff dipper, Doctor Bloodgood reports in the next paragraph, and I am going to read the whole paragraph.

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"The rarity of cancer of the tongue in women is additional evidence. In the few cases of the cancer of the tongue in women the patients have used tobacco usually in the form of snuff by the mouth."

Doctor, that information has been known for 65 years, hasn't it?

A. Yes.

Q. Doctor, is the Journal of Cancer considered to be an authoritative journal?

A. May I make a comment on Bloodgood's paper?

Q. Sure, go ahead.

A. First of all, it doesn't surprise me, because, you know, a patient who has developed carcinoma of the tongue for any particular reason, there is no reason why he can't also be a snuff user. That does not necessarily mean a cause and effect relationship.

Q. I agree, Doctor, but then the article the man said, "The rarity of cancer in the tongue in women is additional evidence. In the few cases of cancer of the tongue in women, the patients have used tobacco, usually in the form of snuff...."

A. I stand --

Q. That's kind of unusual coincidence?

A. I stand by my statement.

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Q. Fine. And, Doctor, let's go back to the question I said a minute ago. Isn't it true that the vast majority of head and neck cancer patients use tobacco in one form or another?

A. Yes, I believe that's true.

Q. How vast is that vast majority?

A. Perhaps, oh, 85 percent, perhaps, maybe 80 percent. I don't know. I -- it is enough that when I see a patient with oral cancer, I mean I think perhaps maybe that the patient has used tobacco and/or alcohol, probably a combination of the two, in an older patient.

Q. Let me hand you the journal article from 1985, doctor.

What I found remarkable about this article, Doctor, is that it was a study of head and neck cancer patients that didn't use tobacco. Just the kind of people you have been talking about.

A. Uh-huh, right.

Q. I found that real remarkable. What I found remarkable about it is what I want you to read to the jury. Would you read the first sentence, please?

A. "Nine hundred forty-five patients with squamous cell carcinoma of the upper aerodigestive tract, were treated at three University of

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Louisville-affiliated hospitals from 1970 through 1979. Retrospective analysis disclosed that 33 patients never used tobacco. This 3.4 percent --

Q. Excuse me, Doctor.

Do you want to read that?

A. "33 patients, that is, 3.4% never used tobacco."

Q. Okay. So this article is going to focus on the 3.4 percent of the head and neck cancer patients that were not users of tobacco.

Doctor, if I take a hundred percent and subtract out 3.4 percent, what do I have left?

A. 96.6 percent.

Q. Doctor, that was a pretty large sample of the patients from three different hospitals, wasn't it, 940 patients.

A. With squamous cell carcinoma?

Q. Yes.

A. Yes, sir.

Q. A pretty large sample, the largest sample I have seen in any of the medical journal articles that have been brought to this courtroom except maybe from India where they had two thousand of them.

Does that impress you that 96.6 percent were users of tobacco in some form or another?

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A. It depends upon the population. Around Louisville, it may be different than someone else in the United States where the population doesn't use that much tobacco. I don't know what the general population uses in this location.

Q. You are speculating that 96.6 percent of the population over there is using cigarettes or chewing tobacco? Is that what you are trying to imply?

A. No, I didn't say that. I don't know what it is. I don't know what it is, what the percentage of the population is.

Q. Doctor, aren't those numbers consistent numbers that are reported in almost every series of head and neck cancer in patients where there is an extremely high percentage of users of tobacco?

A. And alcohol.

Q. Yes, and some of them also use alcohol.

A. Yes.

Q. But a lot of them don't, and they still get it?

A. That's right.

Q. Squamous cell carcinoma, right?

A. That's correct.

Q. Now, Doctor, is the scientific evidence strong that the use of snuff causes cancer in humans?

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A. Repeat the question.

Q. Is the scientific evidence strong that the use of snuff causes cancer in human beings?

A. It's significant, yes, yes, it is.

Q. Strong?

A. Yes, you can say strong. In some people.

Q. That's exactly what the Surgeon General of the United States says, --

A. Yes.

Q. -- isn't it?

A. Correct.

Q. And I take it that you do agree with the Surgeon General of the United States?

A. In -- in some patients, because the use of tobacco does not -- there are millions of users of -- of snuff, for example, that do not develop squamous cell carcinoma.

Q. Yes, sir. A vast majority of the people that are exposed to the polio virus didn't get polio, either, did they?

A. That's correct.

Q. It doesn't mean the polio virus didn't cause their polio, though, does it?

A. It means to me that there is some other factor involved.

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Q. Yes, people are different, aren't they, Doctor?

A. They certainly are.

Q. And they are different at different times in their lives, aren't they, Doctor?

A. That's correct.

Q. Doctor, a vast majority of the people exposed to asbestos don't get mesothelioma of the lungs, either, do they?

A. That's correct.

Q. Does that mean that asbestos is not a cause of that mesothelioma, that cancer in those people that are exposed to it?

A. It means that it causes cancer, mesothelioma in some patients is what it means.

Q. Yes, sir. Do you think those some patients are entitled to be warned that there are chemicals or substances that they are being exposed to that can cause cancer in human beings?

A. "Entitled to be warned," that is -- that's a complex question, and I don't think I can address myself to that. This is --

Q. Whether they are entitled to be warned or not, I take it it is your testimony that you wouldn't want to be a subject of an experiment for somebody to

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give you a carcinogenic chemical, especially, without your knowledge.

A. It depends upon the dosage. These are dose related.

Q. You would be just real happy to have somebody give you carcinogenic chemicals without you knowing about it?

A. As a matter of fact, I am subject to carcinogenic substances every day in my job.

Q. Yes.

A. We all are.

Q. But you know that, don't you?

A. Yes.

Q. You don't go out for --

A. In most cases.

Q. You don't go for you for pleasure and buy stuff to stick in your mouth 10 or 12 times a day and expect there to be carcinogenic chemicals in there without the manufacturer that knows they are there, at least letting you know about it, do you?

A. Are you talking specifically I mean about tobacco products or are you talking about products in general?

Q. Doctor, I don't care. Wouldn't you want to know?

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A. Yes, it would be nice to know, yes.

Q. Do you think the father -- Have you got any children, Doctor?

A. Three.

Q. Do you think the parents of young children that are carrying cans of snuff in their jeans would like to know about it?

A. Yes, absolutely.

MR. BRALY: Nothing further, Your Honor.

MR. JENNINGS: I have just a couple questions.

REDIRECT EXAMINATION

BY MR. JENNINGS:

Q. Doctor Hansen, with regard to Doctor Westbrook's study, were you aware that that study was limited solely to cancer of the buccal mucosa and the alveolar ridges?

A. No, sir. I don't -- I have never seen this article before.

Q. Well, if you look at the article where it describes the methods and materials.

A. Yes, sir.

Q. What does it say?

A. There are two paragraphs.

Q. Well, read the one that says who the

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patients were?

A. Right. "The records of all female patients with cancer of either the superior alveolar ridge, buccal mucosa, or inferior alveolar ridge, seen at the University of Arkansas for Medical Sciences from 1955 through '75, reviewed."

Q. So in order to get into the patient study the patient had to have cancer of the cheek or gum, is that what that says?

A. That's correct, that's correct.

Q. So that Doctor Westbrook wasn't looking at any tongue cancers, was he?

MR. BRALY: Objection, Your Honor. I don't believe he asked the right question.

Q. (BY MR. JENNINGS) Did Doctor Westbrook look at any tongue cancer?

A. No, sir.

Q. Did you know that Doctor Westbrook testified that he had never seen tongue cancer in a young person?

A. I didn't know that.

Q. You were asked about whether these papers that are listed, the 14 of them that were listed on that chart, made any mention of snuff. Did every one of those papers tell whether or not the cases had

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used tobacco?

A. Did any or all of them? Repeat the question, please.

Q. Did each one of those papers describe whether or not there was use of tobacco?

A. I don't recall. I don't recall that at all, that there was not anticipated that in this age group that any of these people would be heavy tobacco users or alcohol users.

Q. You don't know whether or not it shows some of them did use tobacco and some of them didn't in some of those papers?

A. I don't recall those details, no, sir.

Q. All right, sir.

MR. JENNINGS: Thank you.

THE COURT: Anything further?

MR. BRALY: No, Your Honor.

THE COURT: You may step down. You are excused.

Counsel come up just a moment, please

(The following proceedings were had AT THE SIDE BAR.)

THE COURT: What is the status of witnesses?

MR. JENNINGS: We have one more witness this afternoon, Your Honor.

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THE COURT: Okay.

MR. JENNINGS: I think it shouldn't take more than an hour.

MR. BRALY: Is that the going to be the end? Are you going to rest?

MR. JENNINGS: No, but that's all we have got available.

MS. DESCHAMPS-BRALY: Your Honor, at this point we would like to ask, they gave us a list, as you recall last week of those people that had payments paid to them, saying those were the only witnesses that they were aware of that they were going to call. We would like to know at this point whether they have additional witnesses that they know that they are going to call that we have no knowledge of right now.

MR. JENNINGS: As of now, we do not have any additional that we know we are going to call. We still reserve the right to decide to call somebody that we haven't as of the moment decided to call.

MS. DESCHAMPS-BRALY: I understand that, but as of this moment you have no knowledge.

MR. JENNINGS: At this moment we think we will have four more witnesses after today, four more medical experts.

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MR. BRALY: Judge, two points. This witness was the third oral pathologist and the fourth pathologist we have heard from. We are going to make a cumulative motion at this time for any further pathologists. That's, you know, getting awfully repetitive at this point.

THE COURT: Let me go ahead and excuse the jury.

(The following proceedings were had IN THE PRESENCE AND HEARING OF THE JURY.)

THE COURT: Ladies and gentlemen, we will go ahead and recess for lunch. We will recess until 1:15, and everyone remain seated until the jury exits at 1:15.

(The following proceedings were in OUT OF THE PRESENCE AND HEARING OF THE JURY.)

THE COURT: Do you want to respond?

MR. JENNINGS: If the Court please, we have one more pathologist to put on this afternoon and no more oral pathologists.

THE COURT: That's fine.

MR. BRALY: Then we expect an early adjournment this afternoon.

THE COURT: Yes. I think the jury at least has indicated they will be very happy to hear that.

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Have you worked with her, as far as your exhibits, both of you, as far as --

MR. BRALY: We probably will do that, probably what we should do, unless it is a real burden on you, as soon as we adjourn this afternoon we will set down with her and help her with that.

THE COURT: That will be fine.

(The noon recess was here had.)

AFTERNOON SESSION

Friday, June 13, 1986

THE COURT: Be seated.

Call your next witness.

MR. JENNINGS: Doctor Rohrer.

MICHAEL DAVID ROHRER, D.D.S., called as a witness on behalf of the defendant, being first duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. JENNINGS:

Q. Doctor, would you state your name, please.

A. Doctor Michael David Rohrer.

Q. Where do you live?

A. Norman, Oklahoma.

Q. What is your business or profession?

A. I'm an associate professor of oral pathology in the College of Dentistry and adjunct associate

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professor of pathology in the College of Medicine, and a faculty member of the graduate school, all of the University of Oklahoma.

Q. At Norman?

A. No, at the Health Sciences Center in Oklahoma City.

Q. I see. And, Doctor Rohrer, how long have you been employed there?

A. Eight years.

Q. Would you give us your educational background, please?

A. Following high school graduation in Michigan, I attended the University of Michigan where I received a degree of bachelor of science in zoology. Then in 1966 I entered the dental school at the University of Michigan, completing the degree of Doctor of Dental Surgery in 1970. In 1975 I returned to the University of Michigan for a three-year graduate course in oral pathology, which I completed in 1978, receiving a degree of master of science in oral pathology and diagnosis.

Q. And did you come at that time to the University of Oklahoma?

A. At that time I was offered a position and accepted at the University of Oklahoma.

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Q. And how many oral pathologists are there in the department at the University of Oklahoma?

A. There are three.

Q. And who are they?

A. Doctor Richard T. Glass is the chairman of the department; Doctor Stephen K. Young is an associate professor in the department.

Q. And yourself?

A. Myself.

Q. Doctor, what professional associations do you belong to?

A. I belong to the American Academy of Oral Pathology. I belong to the International Association of Oral Pathologists, the American Dental Association, the Oklahoma Dental Association, Omicron Kappa Epsilon, which is a national dental honorary society, Sigma Xi, which was a national honorary research society. I'm sure a couple of more. My secretary could tell you.

Q. Doctor, have you published any articles in the literature?

A. Yes, I have published articles in the scientific literature, primarily in the field of oral pathology.

Q. Could you give us an idea of how many?

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A. Between ten and fifteen, I think.

Q. Has all of that been since you came to the University of Oklahoma?

A. Yes, I think all of the publication dates are since my arrival in 1978 here.

Q. Doctor Rohrer, tell the jury what you do as an oral pathologist at the University of Oklahoma Dental School.

A. An oral pathologist is a specialist of dentistry and primarily an academic specialist. We can't survive out in the world away from academics. There just doesn't appear to be enough for us to do, like oral surgeons or orthodontists or those type of specialists.

So academician, my job is divided into primarily three areas, teaching, research and service. In teaching I teach on the undergraduate level of college to dental hygiene students. I teach on the undergraduate level of dental school and medical school to those students in dental and medical school primarily, a course in -- courses in pathology. I teach also residents who are doctors who have already graduated, but taking further training in graduate dental areas as well as medical areas.

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Oral surgery is one that sort of overlaps, but I teach two residents in ear, nose and throat, and oral surgery, orthodontics in those areas, plus a lot of teaching in what we call continuing education which is two people who are already out practicing and coming back for updates on their education.

In research, all people in academics are expected to do research, and we sometimes do. We don't have enough time. I can tell you we don't have enough time. And I try to keep current and keep research projects going, and my most recent endeavors have been in the area of sterilization.

And a young fellow who was a student at the time he started is now a practicing dentist in Ardmore. He and I have just received a patent on a method of sterilizing different materials, including dental instruments and things, with microwaves, a microwave oven. And we are presently in the midst of a patent application, which we don't know the results of yet, on sterilizing soft contact lenses with microwaves.

I have done research in infection, infectious processes with a gentleman in the microbiology department primarily on the types of organisms that thrive with a lack of oxygen and are

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killed in the presence of oxygen, those type of organisms which we find in our gut, and it is related to dentistry, because we also find them in the deep gum areas in gum disease.

I have presently returned from a sabbatical trip to the University of Hamburg, Germany, and I have learned a technique which will allow me and the people in my lab to conduct research on bone and teeth and implant situations in dentistry that have never been able to be accomplished before because we do not have to decalcify the bone in acid so that we can cut them with a knife.

We can also look at metal and ceramic under the microscope, and when we begin this later this summer, I will be the only person in the United States doing that.

As far as service goes, part of the service is seeing private patients. I see private patients on consultation as the patients come into the office and are referred from outside practitioners, primarily dentists but often physicians, and the largest part of my consultation service is where I don't see the patient but a portion of their tissue is sent to me in what I'm sure everybody knows as a biopsy. A dentist or physician takes a piece of

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tissue, sends it to me, and under the microscope I diagnose what that is and then can give them a diagnosis and often advise on the care and treatment of the patient.

That's probably what sets me off more from the rest of the dentists. Some of the other specialists could do other things I can do, but that's the point that probably sets off the pathologist more from any other specialist.

Q. Doctor, are you familiar with the medical records of Sean Marsee?

A. Yes, I am.

Q. Have you read those records and do you understand the disease from which he suffered and from which he died?

A. Yes.

Q. Have you seen tissue slides, tissue from Sean Marsee?

A. Yes. I have seen what we call recut tissue slides which mean they weren't the original ones that the pathologists looked at but cut from the same tissue.

Q. Maybe you better explain just a little bit to the jury what a tissue slide is and how it is made.

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A. If a person has what we generally call a lesion, which is anything abnormal, and one wants to know exactly what it is, the best way to know is to look at the cell structure, and the only way we can see the cell structure is through the microscope.

So if a person has something that is unknown to their physician or dentist, the person -- the practitioner will take a portion of this if it is a large lesion, or sometimes if it is a small lesion, they can take the entire thing.

They put it in a fixative, which means the tissue will not die. It is sort of frozen in time at that point. Then this fixative is sent to us. Most of our specimens come through the mail, although it can just be carried by hand to the laboratory.

From that point it is sent through a process through which it is finely planed in a block of wax which is like paraffin, like you would put on the top of jelly or jam. In that block of wax it is then able to be sliced very, very thinly, probably -- approximately a tenth as thin as one of our hairs.

At that point we can see really looking at this one layer of cells. That's put on a glass slide about that big (indicating), and on that glass slide at that point I am able to look at it under the

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microscope and through my training and experience, as I said, what makes a pathologist, I am supposed to be able to tell what -- what it is that I am looking at. And we -- we stain the tissue with certain stains to bring out different parts of the cells.

And at that point we come up with what we call, you know, the final diagnosis, which we give to the clinician, who is the person treating the patient.

Q. You have a part of the tissue embedded in the paraffin, -- we call it wax -- and you slice off a slice from that block and make a slide out of it?

A. Yes.

Q. Now, you still have the rest of the lot left?

A. Yes, you would have. Unless you cut an awful lot of slides first, which we don't, you would have the vast majority of the tissue remaining; and we save that forever. It is not like a record that you keep three years and throw away. We save those forever.

Q. That means you have available to you the paraffin block from which you could cut additional tissue for slides?

A. Yes, and that's done frequently.

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Q. And that is what you called a recut?

A. A recut, yes.

Q. So what you saw was a slice of the paraffin block containing a part of the tissue from the same block that the original slide was made, but this was a second, at that time another cut from that same block?

A. Yes.

Q. Would those usually be identical?

A. They can't be absolutely identical, because it is another tenth of a human hair away, but as pathologists we assume that it's -- any of these things are simply samples, that it is as good a sample as long as we are in the original area.

Q. All right, sir. While we are at it, suppose you tell the jury the difference between a permanent slide and a frozen section.

A. I explained the permanent slide, and one thing I failed to mention was that this takes a process of overnight until the next day. So usually these answers are available in approximately 24 hours from, or less, from the time it comes to the lab.

There are times when 24 hours, although it may seem fast as far as hospitals work, sometimes it isn't fast enough, for instance, if the patient is on

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the operating table and under anesthesia. In that circumstance the tissue can be frozen, fast frozen, sometimes with liquid nitrogen or other means, and this holds the tissue firmly and it accomplishes almost the same things as what happened when we put it in the wax block for the permanent section.

Then a machine that cuts the slides. It is a special machine, because it obviously has to be super cold in there to keep the tissue frozen, so the knife is down in like a deep freeze area, and the section is cut of the frozen tissue, put on the slide in a similar way and looked at, and that can be done in maybe as fast as ten minutes, but it usually doesn't take much longer than 20 minutes to look at that.

There is another difference, in that the slides look a little bit different. Everything you look at is not exactly the way it happens in nature. We call it artifacts. If you stick something in hot paraffin, you can imagine it will change a little bit. This is -- we are used to this type of artifact. We are used to what this looks like once it has been through there. That's what we are trained to look at.

With the frozen section, the freezing and

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not having wax in there makes it look a little bit different, and if you are asking me which one is better, it is definitely the permanent section.

For things that are very clear-cut, a pathologist will make a judgment on the frozen section, but if it is a really difficult thing that on the permanent section might make him scratch his head, he will often, he or she might say, "I'm not even going to make a decision," or sometimes you will say, "It doesn't look like tumor," or "it does look like tumor," but just back off.

I am not going to get into too much detail, because sometimes it is difficult to see.

Q. So the permanent slide is the better diagnostic tool; is that correct?

A. Yes. Some pathologists get, by a great deal of experience, get to be super experts at looking at frozen sections, but virtually all of them would say if you wanted to bet a year's salary on something, they would all want the permanent section.

Q. Okay. You say you have looked at tissue slides from the tissue of Sean Marsee.

A. Yes.

Q. When did you do that?

A. On December 18 of last year, 1985.

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Q. And what did you find when you got them under a microscope?

A. Yes.

Q. And what did you find from that examination?

A. The overall diagnosis was squamous cell carcinoma, which is a cancer of the epithelial cells. We have epithelial cells covering, a skin inside our mouths, and all this covering is epithelial. So squamous cell carcinoma just means that.

The squamous cell carcinoma, as far as being characterized by how it looked, pathologists are not content to just leave it at that. Sometimes we think maybe we want to make ourselves seem more important, but usually we try to say that this really helps the clinician to differentiate it. This case was what I would call moderately differentiated to poorly differentiated.

Would you like me to explain that or --

Q. Yes, just briefly. There's already been an explanation, but I think if you would cover it briefly again.

A. If the cell looks like a normal nontumor cell, as close as it looks to its sort of cell of origin, the better differentiated we say it is. If

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something is extremely well-differentiated, it would look very very much just like normal tissue.

The further away from that it gets or the more angry or cancerous or ugly-looking it is, we say it is poorly differentiated. Usually nothing is absolutely uniform, and there are areas of variability. In this situation, the first surgery, the cells, and there were some areas that were moderately well-differentiated; the majority was very poorly differentiated.

The other thing that -- there are many things that a pathologist can describe as he is looking at this, and one of them is where the tumor is going. Is it growing -- growing out like a cauliflower or going down in like the roots of a plant down in the ground. Some say exophytic or endophytic.

Well, this was very endophytic. It was very infiltrated. There did not seem to be a component coming out. The entire tumor was invading and growing down in, and since the tongue is primarily an organ of muscle and muscle is made up of many fibers like the fibers that make up a rope as a whole, the cancer cells that I saw were very infiltrating and invasive between the muscle cells. So we would call

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this an invasive aggressive squamous cell carcinoma, moderately to poorly differentiated.

Q. The term "ulcerating lesion" has been used. What does that mean?

A. An ulcer is simply the loss of the surface. We have all had ulcers, and maybe the best example would be a child who falls on the driveway and skins his knee. Where there is no skin left any more, that is an ulcer. So an ulcer can be caused by anything. It is a general term that just means loss of the surface covering.

Q. Now, you talked about squamous cell carcinoma, and that is identified as, as I understand it, as a cancer that has formed from a squamous cell; is that correct?

A. That's correct, and the squamous are the covering cells.

Q. And how many different kinds of cells do we have? Oh, don't tell me all of them, but some of them?

A. Well, the cells that make up the body, I can think of blood cells, and there are many different kinds of blood cells, red blood cells, plus all the different kinds of white blood cells. There are nerve cells. There are connective tissue cells,

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which just sort of hold everything together. There are fat cells; there are bone cells; there are cartilage cells. There are virtually everything you can think of, kind of tissue, tumor cells, liver cells, everything.

Q. What is a sarcoma?

A. A sarcoma is a cancer of a nonsurface cell. Sort of anything that is not an epithelial or covering or lining cell is a connective tissue cell. So a cell which derives from, say, muscle would be a sarcoma, because muscle, you never find that on the surface. A tissue -- a tumor that would be derived from the skin or, say, from the lining of your stomach, even though it's inside, it still has the covering, so it would be the other kind, a carcinoma.

Q. All right, sir. Now, getting back to Sean Marsee, if we may. In addition to examining the tissue slides, you said that you reviewed his medical records?

A. (Nodding yes).

Q. So you know about the disease and the course of the disease and the ultimate result of the disease?

A. Yes.

Q. And you know that he had a squamous cell

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carcinoma of the right lateral border of the tongue?

A. Yes.

Q. And you know the histological or the microscopic appearance from the slides. You also know, I presume, that he was a user of Copenhagen Snuff.

A. Yes.

Q. That he had used snuff for approximately six years at the time of his diagnosis.

A. Yes.

Q. And that he was 18 years old at that time.

A. Yes.

Q. And did you also know that the testimony is that he placed the snuff either on the right side of the lip, lower lip, or on the right buccal pouch area?

A. Yes.

Q. All right, sir. And is there anything else that I haven't covered that you think of that you took into consideration in evaluating this situation?

A. No. That covers it, I think.

Q. Well, you know that it did metastasize.

A. Yes.

Q. And ultimately he had a section of the neck, in fact, two radical, one radical neck dissection and

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one less radical one, I guess I would say; is that correct?

A. Yes.

Q. All right, sir.

Q. Now, Doctor Rohrer, based upon the information that you have from the sources as have been described, do you have an opinion as to whether or not Sean Marsee's use of snuff was a cause of his cancer of the tongue?

A. My opinion is that Sean Marsee's use of snuff did not cause the cancer of his tongue.

Q. Would you explain to the jury why you reached that conclusion?

A. I based my opinion on three general areas: the clinical setting, the microscopic picture and then the progression of the disease. In the clinical setting, in my experience and in my opinion, there are several things that are wrong. No. 1, the age of the patient is far too young. No. 2, the site of the cancer is not the site at which we see cancers which are related to elderly people with long-term snuff use.

On the other side of the coin for the clinical setting is the fact that for me, since it does not fit in this category of long-term snuff use

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and the results therefrom, at the same time it fits an entity which is extremely rare but is known to me and should be known to the people who deal with cancer of the head and neck as an entity which does not have an exact name, but is known and I think of it as cancer of the tongue of young people or cancer of people under 30. That's for the clinical setting.

The histologic setting, I explained to you my findings and I would explain the difference. In my experience the -- and generally from the literature, the type of cancer that is seen under the microscope related to people, in people who have had long-term snuff use is a well-differentiated cancer. And I explained that meant it looks more like the parent tissue.

I explained the outgrowing and ingrowing, the type with long-term snuff usage, that it is related to that, tends to be the outgrowing kind. It tends to be as well-differentiated and not infiltrative and not invasive.

As far as the clinical course goes, people who get cancer that, because of a very long-term use of snuff, we relate to snuff usage, they are generally very old; and the cancers, although it is

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cancer, it tends to run a very -- a slow course and is not extremely aggressive, does not readily spread or "metastasize" was the word that Mr. Jennings used. It does not spread and does not tend to run an extremely rapid course, which is not treatable and results in a rapid death.

Putting those things together with what I found from the facts from this case, from my personal experience and knowledge and from what I have known from the literature, that those were the things upon which I based my professional opinion.

Q. Doctor Rohrer, you are familiar with at least some of the literature with regard to tongue cancer in young persons, I take it.

A. Yes.

Q. There is a chart up there that lists the papers that I have been able to find and have been found for me. Do you recognize some or any of those?

A. Yes. I recognize the authors of most of these. I have seen them, yes.

Q. There has been testimony and I think Doctor Ackerman so testified -- incidentally, do you know who Doctor Ackerman is?

A. Yes. I have never met the gentleman, but he is certainly well known to pathologists.

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Q. Doctor Ackerman has testified, I think, that there was in the literature some 40 or 41 cases, and I think if we look at these cases, --

MR. JENNINGS: If the Court please, if I may approach the witness.

Q. (BY MR. JENNINGS) -- if we look at the cases that are earlier, which I think might be the ones that Doctor Ackerman had in mind, those cases will add up to 41 if my addition is correct. Then it appears that the cases reported in 1982 and later include an additional 50 cases.

Are you aware of any other literature on the subject of tongue cancer to young people?

A. No. I'm aware of that number 41, also, which also sticks in my mind, 41 reported cases in people under 20, which may be also -- I am not saying this doesn't add up to 21, but that is one thing that sticks in my mind when I think of how rare the disease is, also. I'm looking at these here not -- and I am not able to recollect exactly which ones were, without looking there exactly, which ones were limited to 20. Most of them are -- it is difficult with this entity, because sometimes they talk about 20, 30 or 40, all of those ages, which pathologists consider to be young people.

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Q. Well, we see that the first one by Moore had four cases and that ran newborn to 15 years of age. And then we have 7 cases from Pichler, ranging from 10 to 19; 5 from Patel, ranging from 11 to 17; and then two of the individual case reports, the one from India and the one from Australia, are both under 20.

I haven't added those up, and I don't know how many of the Venables or Byers or some of the others might be under 20, but perhaps that is the explanation.

Doctor, based on your knowledge of that literature and what it says, tell us what the conclusion is from that literature with regard to tongue cancer in young people and its causation.

A. In regard to its causation, the conclusions of this whole body of literature is that this is an enigma. We don't know what causes it. In virtually all of these cases there is no known risk factor that we can judge ourselves. There probably is something going on, but at our state of knowledge there is nothing that we relate to what we generally think of as high risk factors for oral cancer, which are numerous and probably been mentioned here, but generally alcohol, tobacco, poor dental hygiene, jagged teeth, poor-fitting dentures, things like

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this.

The conclusions of the authors are that the causation is unknown, and that's one of the reasons why these things are lumped into this category of sort of unknown things. It is not a given -- it is not given any better name than cancer of the tongue in people under 30 or in young people.

Q. And do all of those papers consider the use or nonuse of alcohol among the patients?

A. Yes, I would have to say they do, although in some I remember that they state "no known obvious risk factor," and that is so well-known that a reader would assume that that was one of them that they had considered.

Q. And do they take into consideration the use or nonuse of tobacco?

A. Yes, I would state the same thing in relation to that.

Q. From this literature is there any association between tobacco and cancer of the tongue in young people?

A. I don't see it from this literature, and I think the conclusions of the authors do not find it either.

Q. Do you know of any literature that finds an

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association between tongue cancer in young people and the use of tobacco?

A. I know of none.

MR. JENNINGS: Thank you, sir.

THE COURT: Cross-examine.

MR. BRALY: Thank you, Your Honor.

CROSS-EXAMINATION

BY MR. BRALY:

Q. Doctor, did you say that the tobacco company brought you Sean Marsee's slides on December 18?

A. Yes.

Q. When did you go on your sabbatical?

A. At the beginning of the calendar year, January 1st, that's when my sabbatical began. I did not leave town at that time.

Q. When did you leave town?

A. The last week of February.

Q. Do you know of any special reason why the tobacco company waited until the end of March to list you as an expert witness after they had shown you the slides in December?

A. I have no idea.

Q. Now, Doctor, --

MR. JENNINGS: If the Court please, I think that's improper.

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THE COURT: That's not relevant, and I will instruct the jury to disregard it.

Go ahead.

Q. (BY MR. BRALY) The studies up there with the check marks, let's see, there's -- let me see here a second -- I guess it is the one by Robins. Do you see that one?

A. Yes, sir.

Q. Actually Robins is not the first author of that study, is he?

A. I don't recognize -- I don't remember the authors. I remember the location of Vancouver. That is what sticks in my mind from that article. I recognize the article.

Q. Is this the article?

A. Yes, by McGregor is the first author.

Q. Do you know why they list Robins over McGregor?

A. I don't know.

Q. At any rate, it says 1983 here, doesn't it?

A. Yes.

Q. That doesn't mean the patients that it considered were 1983 patients, does it?

A. Certainly not. This is so rare to get 11 patients -- I can't remember the time span, but it

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certainly was a number of years -- from their clinic.

Q. Would 1944 to 1982 be the relevant time span?

A. It may be.

Q. If young people didn't start using Copenhagen snuff until about 1975, it wouldn't very likely include very many young people that had been exposed to Copenhagen Snuff, would it?

A. Are you speaking of Copenhagen as a brand name or just snuff?

Q. Yes.

A. Okay.

Q. Or snuff in general.

A. Okay.

Q. How about snuff in general?

A. Okay. Snuff in general, I would say for us to study people, which most of the studies are for people in their 70's and 80's and they say that they have used it for, these people, if they are in their 80's, for 70 years, they obviously had to start as young people.

Q. Doctor, did you know what the Surgeon General says about the incidence in the rise and use of snuff?

A. Well, I am not sure exactly what you are

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referring to. I have read the Surgeon General's report, and I have read several articles on that. I am not sure exactly which one you have in your hand.

Q. Well, I don't have one of them, as a matter of fact. I have got an exhibit from the testimony of one of the witnesses who supplied information to the Surgeon General that shows back in 1976 that of the 12-year-olds there was less than 4 percent that were dipping snuff and that by five years later it had gone up to 18 percent.

Is that consistent with your experience?

A. My experience is limited to the young people in the areas where I have practiced dentistry and taught, which is Michigan and here, and my experience is that it is more obvious to us that young people are using it.

Q. She shows that one category of nine-year-olds that in that five-year period of time the use went up from 4 percent to 33 percent. That would indicate that there has been a dramatic rise in the use of snuff by young people, wouldn't it?

A. Yes. I am not sure of the numbers and I haven't read the study.

Q. Now, Doctor, there are old people that don't use tobacco that get cancer of the tongue, aren't

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there?

A. Certainly.

Q. And they are not very common though, are they?

A. Cancer of the tongue?

Q. No, old people that don't use tobacco that get cancer of the tongue.

A. The general opinion I think is that cancer of the oral cavity is related to certain risk factors and tobacco usage and alcohol are often considered as a pair, and in most studies those go hand in hand.

Q. But, Doctor, isn't it true that in the large clinical studies something on the order of more than 90 percent of the victims of head and neck cancer are users of tobacco?

A. That probably is true. I don't know which one you are referring to.

Q. Well, I will refer to this one. It is Exhibit 80-PP. It is from Cancer, 1985.

A. I have read that, yes.

Q. Would you read the sentence.

A. "Nine hundred forty-five patients with squamous cell carcinoma of the upper aerodigestive tract (SCC-UADT) were treated at three University of Louisville-affiliated hospitals from 1970 through

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1979."

Q. Next sentence?

A. "Retrospective analysis disclosed that 33 patients (3.4 percent) never used tobacco."

Q. Doctor, let's see if we can figure out what's going on. You take people from birth to age 75. When you get out here, you got the cancers of the tongue or oral cancers or whatever you want. You got some of these that are occurring in nontobacco users, don't you, Doctor?

A. Yes, sir.

Q. And you have got a whole bunch more that are occurring in tobacco users; right?

A. From that study, that's what they say.

Q. And if they are occurring in tobacco users, that means they have been using tobacco, doesn't it, Doctor?

A. Yes. I don't think that one stated how long, but you would assume that they had been using it.

Q. Now, it doesn't surprise you that you find a few isolated cases among young people at age 10 or 20 or 30 or 40 or whatever that are down here that are also nontobacco users, does it?

A. Could you repeat that again.

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Q. It doesn't surprise you to find oral cancer cases, tongue cancer cases, oral cavity cancer cases in young people. These aren't just tongue cancers in the same reports. There are other oral cavity cancers besides tongue cancers in those same studies, aren't there?

A. There may be a few. Most of them, the names that I am familiar with there are specifically tongue, but I know there were a couple of articles, and I can't say which ones, which said tongue and lower oral cavity. I can't remember which one. Most of those are tongue.

Q. But it doesn't surprise you that there is a background incidence of oral cavity cancer cases in nontobacco users among young people just like there is among old people?

A. It's extremely rare.

Q. It is rare in old people. It is rare in young people, isn't it?

A. The nontobacco users who get --

Q. Oral cancer?

A. -- oral cancer are a small percentage.

Q. But, of course, a person who is 20 years old hasn't had an opportunity to use tobacco very long, has he?

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A. No, usually they start --

Q. If he's a cigarette smoker --

Excuse me, Doctor?

A. Go ahead.

Q. If he's a cigarette smoker and he is going to high school, it is usually in most high schools hard to smoke in class, isn't it?

A. They usually don't allow smoking in class.

Q. And usually parents frown on that at home. Not always, but usually.

A. I suppose.

Q. So it is still something in those teen-age years that they do after school and while they are riding around dragging Main Street on Friday and Saturday nights, isn't it?

A. Yes, although some places I have seen that high schools have smoking rooms, which seems odd.

Q. All right. I don't suppose you support that, do you?

A. No, I don't.

Q. Are you aware that Sean Marsee used snuff when he got up in the morning and used it while he was in school?

A. No. I'm familiar only with the length of time it was claimed he used in years.

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Q. Are you aware while he was sitting in class in order to get away that he had to swallow the juice instead of spitting it out?

A. No, I am not aware.

Q. You didn't read those depositions, Doctor?

A. I am not sure what -- no, the only depositions I read are my own and one other. I haven't read any others.

Q. But, Doctor, if we go back in here and we start in 1975, we start adding a bunch of tobacco users that are heavy users of snuff, it wouldn't surprise you to start seeing some cancers due to snuff, would it?

A. Well, I'm not sure what you mean by "cancers due to snuff," because it is difficult for us to even say in the old people that we banter that term around, but we are not absolutely sure it is due to snuff, although we think it is highly related to that because of the long-term usage.

It would surprise me in one way, because we think of -- if we are thinking of something applied to mucosa, we are thinking of something like a chemical, and usually we think of a very long-term effect for a chemical action on tissue.

Q. Is that why Doctor Lijinsky's rats get

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cancers in two years from the exposure of low levels of nitrosamines?

A. I'm not familiar with Doctor Lijinsky's research.

Q. Has the tobacco company given you Doctor Lijinsky's deposition so you could read it?

A. No.

Q. Have you read the literature on what carcinogenic chemicals do to laboratory animals?

A. I have read some, yes.

Q. Have you read the literature that shows that if you take these carcinogenic chemicals and give them to a laboratory animal that has a life span of two or three years that they will still get cancers in a year-and-a-half or two years? If you give it to another laboratory animal that has a much longer life span that almost exactly the same thing happens? They still get chemically induced cancers in two or three years? Did you know that, Doctor?

A. That was a complicated statement. You are telling me and using me to answer something that I am not familiar with what you are talking about.

Q. The tobacco company hasn't talked to you about that aspect of chemical carcinogenesis, have they?

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A. I have read a few articles. That's not my area of expertise. I am not a toxicologist.

Q. You don't deny that that is what the research reports say, though, do you?

A. I can't deny it. But I can't -- I'm not familiar with it, so I can't support it either.

Q. We will trust the jury's memory of that evidence in this case.

A. Okay.

Q. You just don't know then?

A. That makes me sound like I don't -- like I am not very smart. I am not sure what that question is referring to.

Q. No, I am not saying that. What I am concerned about is that that information wasn't provided to you before you started rendering your opinions, and you are telling me that it wasn't.

A. No, I had my opinion very early on in the case. I had my opinion long before the tobacco company ever approached me, so -- and my opinion was based on my expertise as an oral pathologist. If you will remember, I gave my opinion to you over a year before the tobacco company ever approached me.

Q. Yes, I remember talking with you.

A. And knowing many more facts, I didn't change

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it after that, so --

Q. Doctor, did you know then what I just told you, and that is that nitrosamines will cause cancer in laboratory animals in a couple of years?

A. I knew that nitrosamines are carcinogenic in laboratory animals. That is not an area that I read in detail, so I couldn't tell you exactly the time span or other things. It is for me in my area, it is probably enough to know that there are carcinogens in certain elements.

Q. You are not telling this jury that you are certain that the nitrosamines in Copenhagen Snuff did not cause Sean Marsee's tongue cancer, are you?

A. Well, I stated my opinion --

Q. I understand --

A. -- the use of snuff did not cause his tongue cancer.

Q. So you are telling the jury that you know absolutely that it didn't cause his cancer?

A. I would be a fool to say that I knew anything absolutely.

Q. All right.

A. And nobody in pathology ever says that or in medicine.

Q. You are telling us that you really don't

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know, is what you are telling us, what caused his cancer?

A. Okay. If you put it that way, I will say yes, and I am no smarter than all of the other people who put all of these people in this category of the enigma of what in the world is going on. There are suppositions.

Q. Do you realize that some of these articles report that some of these people that were victims were, for instance, a chemist that was pipetting carcinogenic chemicals? Did you know that was in one of those?

A. No, I don't recognize -- I don't remember that from reading one of these.

Q. Do you recognize in one of those reports one of the persons that got tongue cancer was a person that had been irradiated for hemangioma on the face?

A. Yes.

Q. You remember that?

A. There was a young person who had radiation early as a child, yes.

Q. Do you remember that one of these people was a person that was a renal transplant patient that had had all kinds of chemicals given to that person in connection with his renal transplant?

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A. Yes, there was an article, I think the one by Lee, if I can go across, I think is -- yes, the 26-year-old probably. The conclusion in that was that here is a young person with cancer of the tongue who didn't have anything else but did have a renal transplant with immunosuppressive drugs, so there is a good chance that it could be that, but I don't think there was any more proof than that.

Q. Yes. Now, Doctor, did the United States Tobacco Company tell you that there was one particular nitrosamine found largely in their Copenhagen and Skoal brands of snuff that was not common to somebody else's snuff that was known to cause cancer of the tongue in laboratory animals?

A. No. I'm not familiar with any chemical that causes cancer of the tongue.

Q. The tobacco company didn't tell you that before they let you go on the witness stand today, did they?

A. They have been relying on my knowledge as a pathologist.

Q. But you are not an expert in chemical carcinogenesis, are you, Doctor?

A. I don't pretend to be.

Q. So you don't know anything about the

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particular nitrosamines that are found in Copenhagen Snuff that are known to cause cancer of the tongue in laboratory animals?

A. No, I'm definitely not familiar with any chemical carcinogen nitrosamine which causes tongue cancer.

Q. And you are unfamiliar with the fact that that was a dose response study and that it was causing cancer of the tongue in laboratory animals in the low dose ranges?

A. I told you I was not familiar with the study.

Q. Now, Doctor, is the scientific evidence strong that the use of snuff can cause cancer in human beings?

A. I believe that that's one of the sentences that sounds like you are quoting from maybe the attorney -- Surgeon General -- I am in the court, so I am thinking of attorneys -- the Surgeon General's report, and when they referred to scientific evidence, as I read these things, they are referring to epidemiological or statistical evidence.

Q. Do you agree with the assessment that's in the Surgeon General's report that the scientific evidence is strong that the use of snuff can cause

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cancer in human beings?

A. My opinion is that --

Q. Doctor, I didn't ask you what your opinion was. I asked you whether you agreed or disagreed with the findings of the Surgeon General of the United States.

A. You are pinning me down, and I would like to qualify it a little bit.

Q. You like to equivocate?

A. All pathologists do that all the time.

Q. Yes, that's in the laboratory. This is a courtroom. Can you give me an answer, Doctor?

A. Do I agree? I'm not doing this to hassle you, but please repeat the question.

Q. Sure. Let's make sure we get it just crystal clear.

A. Okay.

Q. I will quote it directly.

Did you say that you thought the Surgeon General's opinion was based on statistics?

A. Yes.

Q. Are you aware that what he said was that after a careful examination of the relevant epidemiologic..." That would include the statistical evidence, wouldn't it?

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A. I am trying to say statistics instead of epidemiology.

Q. He also went on to say "...experimental and the clinical data, the committee concludes that the oral use of smokeless tobacco represents a significant health risk."

Do you agree with that?

A. Yes, I agree that the long-term use of smokeless tobacco probably presents a health risk. I wish you would let me qualify it, but I am sure you probably won't.

Q. Doctor, do you agree with the statement of the Surgeon General of the United States where he says further down on the same page in numerical Paragraph 2, "The scientific evidence is strong that the use of snuff can cause cancer in humans"? It is time to stand up and be counted, Doctor.

A. Okay. Saying "the scientific evidence is strong"?

Q. "The scientific evidence is strong that the use of snuff can cause cancer in humans."

A. Okay. Old humans for a long period of use are the studies he's looked at and, excuse me, but I think you are sort of trying a lawyer's trick which if I were sitting around a seminar table I wouldn't

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let you do. If you are talking with another pathologist --

Q. You won't give us a straight up "yes" or "no" whether you agree with that statement or disagree with it?

A. If you would let me qualify it, I would agree with it. I think all his studies, he's basing it on the -- primarily on the Winn Study, which was elderly females in the Southeast, and some similar studies for that, and I would never disagree with that. I have quoted that study in an article I have written. I think it is a high -- highly associated risk factor for developing cancer in elderly people who have used it for a long time.

Q. "Yes" or "no," Doctor?

A. I can't remember the question now.

Q. All right.

A. Do I agree? If I am thinking what I know he based that on, yes, I agree. But I also read the studies that mostly that was based on.

Q. And, Doctor, do you agree with the findings of the International Agency for Research on Cancer that "there is sufficient evidence that oral use of snuffs of the types commonly used in Northern America and Western Europe is carcinogenic to humans"?

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A. They base that on epidemiological studies, also, and that's a little --

Q. Doctor, --

A. -- a little stronger. I would say I certainly agree it's associated with a high risk factor.

Q. Don't you think the mothers of these 12-year-old kids would like to know about this, not to speak of the 12-year-old kids themselves, before they start putting this stuff in their mouths?

A. I think I'm on record in several ways in different media, in the print media and on cancer TV shows, as agreeing with you. I certainly agreed with the --

Q. You think the tobacco company has been remiss in not putting warnings on for many years, don't you?

A. Well, that's -- that's pretty strong. That's a hard way for me to answer it. Ask -- either ask me again or ask me in another way. That's --

Q. Well, if I do ask it again, are you going to equivocate again on it, Doctor?

A. You asked me several times to see if I change my answer. I will ask you several times to see if you will change your question.

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Q. See, I have got an advantage. I have got the court reporter who can read the question back.

A. Okay.

Q. Do you want him to do that, Doctor?

A. Okay.

(The last question was read by the reporter.)

A. I would favor and I have favored warning labels on smokeless tobacco.

Q. The answer to my question is "yes" or "no," Doctor?

A. Have they been remiss from a public health standpoint, yes. From a legal standpoint, there are things that as a pathologist I don't understand.

Q. You are not a lawyer, are you?

It is certainly something you would want to know about before you will put in your mouth whether it had had carcinogens in it or not, isn't it?

A. Yes.

Q. And I take it that you would not volunteer you or your family or especially your children to become the unknowing victims of an experiment to have carcinogenic nitrosamines placed in their mouth?

A. I would certainly want a well-written and explained -- what do you call it, the consent form for any experiment.

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Q. It would be unethical to conduct any such experiment on humans, wouldn't it, Doctor, no matter what this consent form was?

A. That's our problem with all research in cancer.

Q. And, of course, in this instance there wasn't any consent form at all, was there?

A. No, it wasn't an experiment.

Q. Doctor, did the tobacco company tell you they knew that they had these nitrosamines in their snuff back in 1974?

A. The company asked me to render an opinion as a pathologist and --

Q. "Yes" or "no," Doctor?

A. No.

Q. They didn't tell you that, did they, Doctor?

A. No.

Q. By your calculation how old was Sean Marsee when he started dipping snuff?

A. I would assume from the numbers we are using it would be 12.

Q. And if he was born in 1964, he was 12 years old, that would have been 1976, and the tobacco company knew about these nitrosamines two years before Sean Marsee started dipping his snuff then?

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A. If you say so. I don't know that.

Q. Doctor, let's talk about the amount of the dose.

A. I'm sorry.

Q. Do you know how much snuff per week Sean Marsee used?

A. I am sorry. I missed the amount of --

Q. The amount of the dose?

A. Oh.

Q. Do you know how much snuff per week Sean Marsee used?

A. I have no idea.

Q. So you then have no idea what dose he got, do you?

A. No, I don't know the amount.

Q. So any comments that you may have made upon the dose that he got were uninformed?

A. No, I wouldn't agree with that. We -- when we see people who have used it for 40, 50, 60, 70 years, they give the history of using it all their waking hours, and sometimes people say they can't sleep without it. The people that use it in my experience use it almost all the time.

Q. Are you aware that the chairman of the board of the U.S. Tobacco Company said the typical snuff

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dipper used a can-and-a-half of Copenhagen a week?

A. I am not aware of that.

Q. Were you aware that Sean Marsee used four cans or more per week?

A. No, I am not aware of that.

Q. Well, if he did, that would be nearly three times the dose, wouldn't it?

A. From what you say and my arithmetic, yes.

Q. That might make his dose of snuff an 18-year-equivalent of the normal snuff dipper, mightn't it?

A. I don't think you could -- well, there are other factors. It is difficult -- it is time besides concentration. You certainly can't just take -- I'm not a toxicologist, but I certainly know you can't just double up -- we can't do studies on the rats with saccharine and give them the equivalent of 355 gallon barrels a year and that is like my drinking Diet Coke. We know that.

Q. Yes.

A. It has to be a time factor in there, also.

Q. Yes.

A. So --

Q. Nice small repeated doses; right, Doctor? That's what the evidence has been in this case,

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Doctor, is that small repeated doses of nitrosamines are more effective than large single doses.

A. I haven't been here.

Q. Doctor, while we are talking about this dose, did they tell you that of all the snuffs tested, in 1981, when Sean Marsee was in the prime of his snuff-dipping years, that these represented the various levels of nitrosamines in all of the label of snuffs that were tested in 1981, did they then come back and tell you that in 5 out of the 7 that Copenhagen topped the scale?

A. You might as well -- I don't want this to sound antagonistic, but you might as well give your speech, because my answer to all of these is, "No, they didn't tell me, no."

Q. That is what I am trying to make sure that the jury understands is how much you didn't know, Doctor. I don't want to stand here and make that kind of a speech, but you didn't know that about the chemical carcinogenesis, did you?

A. No. I told you --

Q. And I am sure the jury has heard this, because you are the fourth oral pathologist they have heard from in the last two days. Did you know that, Doctor?

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A. I knew that other ones were testifying. I didn't know which number and who --

Q. Not a one of them had been informed of the same information that we had been discussing. Did you know that?

A. You could probably find that in all professions about all -- about different aspects of what somebody works with every day.

Q. Do you suppose that the Surgeon General considered that kind of information when the Surgeon General and his rather large advisory committee of distinguished scientists from around the country, indeed, around the world, made the finding that the human evidence is strong?

A. The human evidence is the epidemiological evidence, and he said the scientific evidence is strong, including epidemiological evidence. I'm sure he included that because there were large sections on chemical carcinogenesis in there.

Q. Doctor, do you recall having written a paper in 1982 about smokeless tobacco?

A. Yes.

Q. That was a few years before the tobacco company contacted you to testify in this matter; right?

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A. Certainly.

Q. And, Doctor, do you recall what the title of that paper was?

A. Something like the effect of smokeless tobacco on the oral cavity.

Q. Doctor, in that paper, you published it in the Journal of the Oklahoma Dental Association, didn't you, Doctor?

A. Yes.

MR. BRALY: Your Honor, could we have the original of his deposition, because it has the original article and I would like to have it marked as an exhibit.

THE COURT: If we did, the courtroom deputy just stepped out.

MR. BRALY: I will take it up after the witness leaves.

Q. (BY MR. BRALY) Doctor, this article, in that article did you state that it is generally agreed that leukoplakia is almost a universal result of using smokeless tobacco?

A. I think you are quoting from the article, yes.

Q. Am I quoting you accurately, sir?

A. Yes, I think I have found out through some

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other articles that other people have written since then where they have done large studies that that perhaps is not the case as I thought at that time.

Q. At any rate, in 1982 you wrote down that it is generally agreed that leukoplakia is almost a universal result of using smokeless tobacco; correct?

A. Yes, I think I defined leukoplakia close to that area, too, because I don't like the term myself.

Q. Then you said, "Up to 7 percent of all leukoplakic lesions may become malignant."

You said that, didn't you, Doctor?

A. Yes, and I am quoting -- I may not have footnoted it. I think probably I did.

Q. And you also said, "Squamous cell carcinoma as well as verrucous carcinoma may arise in the mouth of a smokeless tobacco user"?

A. Yes, sir.

Q. Then you said, "The factors which determined whether a tobacco chewer or snuff dipper will develop ordinary squamous cell carcinoma or verrucous carcinoma are unknown."

Did you say that?

A. Yes, sir.

Q. So as among those people that are snuff dippers and tobacco chewers, they don't know whether

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they are going to have the verrucous variety from which there is some hope for recovery and survival or whether they are going to have ordinary squamous cell carcinoma from which there is much less hope?

A. You are lumping squamous cell carcinoma into a large category which I would split as a pathologist into smaller categories.

Q. You didn't do that in this paper though, did you?

A. That was written to warn the dentists of the state of something that Doctor Young and I considered a potential problem, and it was not meant to be an exhaustive article or an exhaustive review of the literature.

Q. You mentioned the study by Rosenfeld and Callaway, and you said yourself, "They found that virtually all of the women had used snuff over a span of many years."

You said that?

A. Yes.

Q. "Studies in India have associated tobacco chewing with 66.8 percent of the cases with cancer of the gingiva -- "

You said that?

A. Yes, sir.

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Q. " -- and 86 percent of the cases of the cancer of the tongue."

You said that?

A. I was quoting that article, yes.

Q. You said that "NNN is the first organic carcinogen isolated from unburned tobacco and is found in highest concentration in fermented snuff..."

That's snuff like Copenhagen, isn't it?

A. Yes, I assume.

Q. And it is not the dry snuff like this 60-year usage that has been described in women in North Carolina?

A. I don't know which one they isolated that from. That was --

Q. So that is another factor about the difference in the dose that Sean Marsee may have gotten that you don't know anything about then, isn't it?

A. I do not know the difference in that study, no.

Q. NNN, let me start, "NNN is the first organic carcinogen isolated from unburned tobacco and is found in highest concentration in fermented snuff and fine-cut chewing tobacco."

You said that, didn't you?

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A. You are reading from my article, yes.

Q. And "NNN..." Would you like to follow along, Doctor? Here.

A. Okay.

(Handed to the witness.)

MR. BRALY: Your Honor, having read what will be marked as Plaintiff's Trial Exhibit 267.

Q. (BY MR. BRALY) And on the second page of the article, Doctor, you further said, "NNN is produced by bacterial or enzymatic nitrosation of nicotine and can be found by reaction of salivary nitrates with nornicotine."

You said that?

A. Yes, I'm quoting from the article by Doctor Hecht.

Q. "In experiments, NNN levels increased 44 percent when stirred with saliva as compared to chewing tobacco not placed in saliva."

You said that, didn't you, Doctor?

A. Yes. Quoting from Doctor Hecht.

Q. And then you quoted Doctor Ackerman, didn't you? And you said, "The effect of smokeless tobacco is not confined -- " I emphasized not confined " -- to one small area. In Ackerman's original description of verrucous carcinoma he stated that

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there was a predisposition of the epithelium over a wide area to become malignant."

That's what you said, isn't it Doctor?

A. That is what Doctor Ackerman said, I think, in 1948.

Q. Then you quoted, "Sundstrom and associates found in their study of cancer in Sweden snuff dippers that 22 percent had multiple areas of leukoplakia outside the snuff lesion and 26 percent had at least one additional primary oral cancer."

What caused those additional primary oral cancers in other places in the mouth if it wasn't the snuff, Doctor?

A. Well, I don't know. I don't think from here it doesn't say it and I can't remember at what distance these multiple areas were either.

Q. Then you talked about women down in the next paragraph, didn't you?

A. Yes.

Q. And unlike other witnesses that the tobacco company has had, you called in a recent excellent study of women from Central North Carolina? Is that how you described it, a recent excellent study?

A. Yes, that's what it says.

Q. Then over on the next page at the bottom,

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you said the study of Winn, et al., is a good source to quote, coming from a recent issue of a nationally recognized journal, the New England Journal of Medicine."

Looking over on the last page of your article, Doctor.

A. That's out of context. The jury doesn't have this to look at. This is a paragraph that quotes the dentist's responsibility to the patient. We are talking about all the things the dentist should do when the patient comes in.

Q. Fine.

A. That is why I am saying this is a good thing to quote as a teaching or a warning for the patients.

Q. It is a good thing to the dentists to rely on, isn't it, Doctor?

A. That's what I stated in here, that it gives them something to go on.

Q. Doctor, you keep qualifying this. I have got to say that is what I said. Is that what you meant?

A. I am not sure what you are referring to here. Certainly it's what is meant at the time.

Q. Are you trying to qualify it, equivocate and tell us today that you mean something different from

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what you meant when you wrote for publication in 1982?

A. No, the purpose for this publication was to, which may be difficult for the jury to understand for me to explain in a short period of time, but there is difference between a scientific article written as a scientist and an article written for general education to the dentists. We were asked by the Oklahoma Dental Association -- I can't remember if it was the editor or an officer -- a couple of times before we got around to do it, because we were busy, to write an article about this, and we were happy to do it because we considered it a public health, a potential public health problem, and that's the reason this was written.

Q. Do you recognize this guy sitting right there?

A. Doctor Morgan.

Q. What is his connection with the world?

A. He's in the State Health Department and I think the director of -- I am not sure of exact title, down at Public Health.

Q. Do you think he wanted you to write something in this article that wasn't true?

A. I'm sure he didn't. I am not that type

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person.

Q. Isn't what you wrote in this article true, Doctor? Irrespective of who you wrote it for, was it true?

A. Yes. That's hard -- I'm not sure exactly which thing you are saying and I am not sure what you mean by "true." I am talking -- If I quote somebody, I have to quote from what they got from the article. I used it as a -- we pick certain things to be used to make a point. We didn't try to balance. I have nothing in here about animal experimentation, and I guess I don't have anything about some of the other articles. We wrote this for a purpose, and it couldn't be a very long article and it's not a scientific article. I certainly wouldn't write anything I didn't think was true, to my knowledge.

Q. This is one of those things that you wrote that you thought was true?

A. Yes. I can see you are trying to work this around to something to come back and hit me with a whammy here on the end, but I am not sure. Certainly, I wrote it. I don't write things I don't think are true.

Q. "Yes" or "no," did you intend for it to be the truth when you wrote it?

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MR. JENNINGS: If the Court please, he's answered the question. He said he wrote it and he doesn't write things that he doesn't think are true, and that is an answer to his question.

MR. BRALY: He said that. Let's move on.

Q. (BY MR. BRALY) Now, Doctor, further in this article, which I assume that you intended it to be true, there is a portion where you did not quote from the literature but where you stated your own thoughts.

A. Can you tell me exactly where you are thinking of so I can look at it?

Q. Yes, right there at the top of the last page, and you said, "When to biopsy the tobacco lesion..."

What is a tobacco lesion?

A. What we meant by that is a lesion, as I explained to the jury, in our terms can mean anything abnormal. A tobacco lesion, in my mind and what we meant here, was an area generally which appears white and is in the area where the person habitually holds their smokeless tobacco.

Q. So you said, "When to biopsy the tobacco lesion is not an easy decision. A moderate amount of tobacco damage seen in an 80-year-old who has used

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snuff for 65 years may seem insignificant but could be very alarming in a 16-year-old."

You are talking about tobacco lesions in a 16-year-old, aren't you, Doctor?

A. Yes.

Q. They do occur, don't they, Doctor?

A. I have seen them. I have pictures of them.

Q. As a matter of fact, because of the recent rise in those tobacco lesions, -- you are talking about leukoplakias, aren't you?

A. I told you before I don't like the term "leukoplakia." I prefer to say white lesion, because -- I prefer to use the term "white patch," because leukoplakia has gotten confused in what it means.

Q. Right. But, nevertheless, you are seeing those tobacco lesions in 16-year-olds, aren't you, Doctor?

A. I have, yes.

Q. And you have already told us that those tobacco lesions that about 7 percent of those turn malignant, haven't you, Doctor?

A. Now you are talking apples and oranges. I was quoting an article which said "leukoplakia," and that was the title they used.

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Q. And you said in this same article --

A. Yes.

Q. -- that up to 7 percent of all leukoplakic lesions may become malignant.

A. Okay. There are many --

Q. Then you said further down in this article about smokeless tobacco, "White lesions in the floor of the mouth, lateral border of the tongue, -- " that's where Sean Marsee got his -- "soft palate or papillary area are much more likely to be potentially malignant than other areas in the mouth."

You said that, didn't you Doctor?

A. I am talking about white lesions, yes. I believe Sean Marsee did not have any white lesions.

Q. You are talking about white lesions in the same paragraph that you were talking about tobacco lesions and in the same article where you are talking about the effects of smokeless tobacco on the oral cavity; right, Doctor?

A. Right.

Q. Then down there at the bottom you say, "Of great concern is the recent increase in smokeless tobacco use, especially among young people."

That is such a great concern that you have recently opened a clinic for snuff dippers, haven't

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you?

A. I was involved in discussions and organization of a clinic which is not like a building, but a time at which we will see patients that dentists or physicians refer to the dental school, yes.

Q. By the way, Doctor, you are aware that on January 11th, about three months before Sean Marsee's squamous cell cancer of the tongue was diagnosed, that he did have a white lesion on his tongue, on the same side where he kept his tobacco? Were you aware of that?

A. I believe that's in his medical record. I would have to look to be sure.

Q. You have a master's degree in oral pathology?

A. It says on the diploma "oral pathology and diagnosis."

Q. It is not a Ph.D. degree in that subject?

A. It's not a research degree. It is -- although I had to do a research thesis to gain it. It's a clinical specialty degree in dentistry.

Q. You can get a Ph.D. in pathology or experimental pathology, can't you, Doctor?

A. You can get a Ph.D. in pathology, but not

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oral pathology any place that I know.

Q. You haven't done that, have you?

A. No.

Q. What is the basis upon which you and the tobacco company have reached an agreement by which you were to be paid for your professional time in reviewing and looking at this matter and appearing and testifying here today?

A. There has been no agreement or discussion at this point, other than to keep track of my time.

Q. So I take it after all of this is over that you can submit a bill to the tobacco company.

A. I assume that's why they told me to keep track of my time.

Q. But the amount by which you were going to charge for your time has not been determined or discussed or fixed?

A. No.

Q. So as we sit here today, no one has any idea figuring out how much you are going to bill the tobacco company for your time, except for you?

A. I think that's true. May I say that I am not doing this for money, and that's probably why they didn't suggest it.

Q. Doctor, I don't have any problem at all with

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experts that are compensated for their time. Every lawyer in the country knows that in order to get experts they have to be compensated for their time. It does concern me that it is an unspecified amount.

MR. JENNINGS: Excuse me, Mr. Braly. I have an objection.

MR. BRALY: Go ahead.

MR. JENNINGS: This is highly improper for Mr. Braly to assert what his concerns might be about anything.

THE COURT: Sustained.

MR. JENNINGS: Thank you, Your Honor.

Q. (BY MR. BRALY) Doctor, just to make sure, you do not have any specific agreement as to how much per hour you are going to charge the tobacco company?

MR. JENNINGS: If the Court please, he's already answered that question and said he did not.

THE COURT: Go ahead.

Q. (BY MR. BRALY) Is that correct?

THE WITNESS: Go ahead and answer?

THE COURT: Yes.

A. I said that's correct, we have not discussed it whatsoever, except keep track of my time, which I told them --

Q. (BY MR. BRALY) You appeared on a television

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program last year; do you recall that?

A. Yes.

Q. And you talked about a connection between smokeless tobacco and oral cancer at that time, too, didn't you, Doctor?

A. Yes. That's a general statement, but, yes, I did.

Q. Did you term the use of smokeless tobacco among young people and its recent increase as "a frightening observation"?

A. I think I remember using that term. I don't think that's -- I don't think that's correct. Do you have the statement there? I don't think that's what I -- I don't think those are my words. I have not reviewed this, but I think, if I remember, it was something about "we are frightened about what may happen." I think that's --

Q. Okay, I will take that recollection, Doctor. Are you frightened by what's happening to these young people from their use of smokeless tobacco?

A. I think I will stand by what I said in -- as I recall what I said in the TV show, that we are -- we are frightened about the potential of an increase in the young people using the smokeless tobacco, and

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as we stated in the article, there are other pressures, such as peer and social pressures which we do not know have been working in the past, so we don't know what's going to happen in the future.

I think I also mentioned the fact that we are looking down the road, we are not worried, say like I was worried about tomorrow but in the future, and I stand by that.

Q. You are biopsying lesions in youngsters that are using smokeless tobacco, aren't you?

A. I have done at least one, and I have suggested it to people, yes.

Q. The reason you do that is because when you see one of these tobacco lesions in a young person, you biopsy it to make sure it's not malignant?

A. Yes. We do it for two reasons. No. 1, no one, no matter who they are or what they say, can tell what is going on in the cells by looking just with the naked eye, so we feel completely justified by doing it. I am not --

Q. It is not in your article, Doctor?

A. Okay. I'm not sure how -- if I -- if I said it in here. In our continuing education classes we suggest a biopsy which is a -- it may not seem to some people as a very easy thing to do, but it is

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very simple and heals right back. We suggest the biopsy as a way to get these people's attention to show how concerned we are that they are maintaining a habit which potentially could cause them trouble later in their life.

Q. But the purpose for the biopsy is to rule out a malignancy. That's the primary purpose, isn't it, Doctor?

A. There are biopsies taken for a lot of things. When you come down to the bottom line, that is almost the -- the bottom -- the ultimate question that everybody wants to know, no matter what you took the biopsy for in the first place.

Q. The answer to my question is you take biopsies for ruling out a malignancy?

A. That is not the only reason we take a biopsy.

Q. That is the most important reason, isn't it, Doctor?

A. It is the most important. The vast majority of biopsies are not taken for that reason. They are to come up with an exact diagnosis. By far the majority are, but the bottom line, as soon as you take a biopsy, then that's the question the patient has, certainly, and they don't -- most patients don't

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care if it's a word this long and that I am excited that I know what it is and the clinician, that they want to know whether it is cancer or not. That is always the bottom line.

Q. And you have done that in young people who have been dipping snuff and have a tobacco lesion in their mouth?

A. Yes, at least once. I stated that to you before.

Q. Who is the chairman of your department?

A. Doctor Glass.

Q. Does he disagree with your position on Sean Marsee?

A. We have agreed not to talk about it. I know that he's listed as an expert witness for you, so I would assume that we disagree, probably not on everything on the whole question, but on -- on the core of this question here is whether this, in this case, did it cause it. I think that's the question, and I suppose if you listed him, then his answer would be --

I don't know, because we have agreed not to talk about this.

MR. BRALY: No further questions.

REDIRECT EXAMINATION

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BY MR. JENNINGS:

Q. Doctor Rohrer, when did Mr. Braly ask you your opinion about it?

A. I had to look this up to get the exact date, but it was on the 3rd of December, 1984.

Q. The 3rd of December, 1984. Did he tell you at that time that a lawsuit had been filed on November the 13th, 20 days earlier?

A. I don't know if he told me the exact date, but I knew that it was right at the beginning. In my recollection I was trying to decide if it was right before that or right after, but I knew it was within a short period of time.

Q. He was seeking your opinion in connection with the lawsuit?

A. Yes. I could explain how the meeting went, but he -- I was there to give my opinion and rendered it at that time.

Q. And did you give him the same opinion you have given this jury?

A. I told him at that time that I agreed with the general notion of discouraging young people from using snuff, that I agreed with the fact that it was a bad thing to do and that I had many patients in my files that I thought would be highly correlated with

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snuff and their cancer.

These patients were all -- almost all women, very elderly and with a certain type of disease. I told him at that time, since I thought I was there to give my opinion at that meeting, that my opinion was that this was a bad case to bring. I'm sure I used that term, that sticks in my mind as a bad case, you know, in a way thinking that if -- if this were lost, it would be, you know, it could set back -- set a precedent and make it harder to get one of these others.

I told him that I didn't think you could get experts from around the country, and I'm thinking of people like myself primarily, oral pathologists, to say that in this case the use of snuff caused this cancer.

Q. So you made it plain to him that your opinion was that snuff in this case did not cause the cancer; is that right?

A. Yes, and I think --

Q. Excuse me, Doctor. Have you changed that opinion since that time?

A. No, I haven't.

Q. You have heard the cross-examination by Mr. Braly. Have you changed your opinion because of that

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cross-examination?

A. No. I still have it.

MR. JENNINGS: Thank you, sir.

THE COURT: Anything further, Mr. Braly?

RECROSS-EXAMINATION

BY MR. BRALY:

Q. Doctor, isn't it in fact true that you were talking to my law partner on this precise issue and what you told her was that this is an interesting case and "if I can do anything to help you, you may call at any time"?

A. I think this was after our meeting in the dean's office, and I did suggest to her to contact Doctor Bob Greer in Denver, and I think I suggested several articles that I knew of and had at hand at that time.

Q. Did you know at that time that Copenhagen Snuff had nitrosomorpholine and nitrosomorpholine was causing tongue cancer in laboratory animals?

A. No.

MR. BRALY: Nothing further.

THE COURT: Anything further?

MR. FINNEGAN: No further questions. You may step down. You are excused.

MR. JENNINGS: If the Court please, I hate

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to have to tell the Court this, but we don't have any more witnesses until Monday.

THE COURT: Ladies and gentlemen, we will go ahead and recess for the afternoon. We will reconvene at 9:30 on Monday morning. Remember, you still have not heard all the case and don't make up your mind until you have heard all of the evidence, and don't read, do anything about the case. Don't discuss the case with anyone, don't listen to anything about the case, and don't do any private investigation of your own. And have a very nice weekend and an early Friday recess, and we will see you Monday morning.

Everyone remain seated while the jury exits.

(The following proceedings were had OUT OF THE PRESENCE AND HEARING OF THE JURY.)

MR. BRALY: Your Honor, can we inquire as to when the defense intends to rest so we can try and locate rebuttal witnesses?

MR. JENNINGS: If the Court please, my best estimate is that we will rest no later than Wednesday.

THE COURT: Thank you.

MR. BRALY: I didn't hear.

MR. JENNINGS: No later than Wednesday.

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MR. BRALY: They have got -- how many witnesses are you planning on calling Monday?

MR. JENNINGS: We are going to have four more medical experts, and we may have lay witnesses, but there won't be many or long.

MS. DESCHAMPS-BRALY: Your Honor, at this point we only know about Doctor Byers on Monday. May we inquire who the other witnesses are?

THE COURT: We don't need to do it on the record. You all can discuss this.

Anything else that you need to take up with the Court before I recess?

MR. BRALY: Your Honor, we need to look at some documents, but I think you can recess and Nancy and we can --

THE COURT: I would appreciate it if you would work with her and see what exhibits that we need to discuss.

Anything from the defense?

MR. FINNEGAN: No, Your Honor.

MR. JENNINGS: No, Your Honor.

THE COURT: Court will be in recess.

(Court was recessed until 9:30 a.m., Monday, June 16, 1986.)

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